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EXISTING COMPULSORY CONTINUATION SCHOOLS IN ENGLAND.

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IN these days, when educational experts and politicians are considering the advisability of the establishment in this country of compulsory continuation schools, and when the more enlightened sections of the population are pondering anxiously the various problems connected with unemployment and the bearing of education upon the industrial efficiency of the nation, it may awaken surprise and interest in many to know that for sixty-five years the British Admiralty has financed and controlled a system of compulsory education for dockyard apprentices, which, in its happy combination of theoretical studies and practical training, in its fair and perfectly democratic methods of selection and promotion, in its splendid results already achieved, and in its latent possibilities of future development and wider application, is, in the opinion of those who know it best, superior to any other system of higher technical education in the world.

The dockyard schools were founded in 1843, the objects being to create a body of educated men from which the officers, draughtsmen, and leading men might be drawn, and to increase the efficiency of the whole of the workmen.

At first the apprentices attended school for three hours every afternoon, commencing an hour and a half before the usual time of leaving work. The period of the course was not limited in the first place, but was afterwards fixed at five years. A few of the best students received scholarships, and continued their education at the Royal School of Naval Architecture, South Kensington, which was also founded by the Admiralty.

In more recent years the scholarship-holders were sent for their higher course of study to the Royal Naval College, Greenwich. In 1889 a change was made; the five years' course was reduced to a four years' course, and the successful students received scholarships for one year at the Royal Naval College, Keyham, before proceeding to a further course of study at Greenwich. At this time the education of naval engineer students was completely separated from that of dockyard apprentices, and was reorganised at Keyham College.

On the completion of their studies at Greenwich College, the successful shipwright apprentices become assistant constructors in the Royal dockyards or at the Admiralty, and until quite recently the fitter apprentices became assistant engineers in the Royal Navy.

The number of dockyard apprentices who receive scholarships and proceed to Keyham College is very small, perhaps, on the average, 1 per cent. of the total entry in all the dockyard towns, and it remains to show what becomes of the remaining 99 per cent. of the boys who enter the schools. Some of the best students who, at the end of the fourth year's course, fail to gain scholarships at Keyham College compete successfully for Whitworth, National, and Royal scholarships and exhibitions, and, having obtained leave from the Admiralty, continue their studies at some approved college, such as the Royal College of Science at South Kensington. After that they may either return to the service of the Admiralty, or they may pass into other spheres of life, enriching other Government departments or private industrial firms with the results of their training. But the majority of the apprentices remain in the dockyards and continue their training in manual work.

On finishing his apprenticeship, the period of which was formerly seven years, and is now six years, the young artisan who has not neglected his studies still has opportunities of promotion to positions such as those of draughtsman, inspector, recorder, &c.; and as the annual entry of apprentices is adjusted roughly to the annual loss through death, superannuation, promotion, and other causes, it rarely happens that any apprentice is discharged on the completion of his apprenticeship.

Now the Admiralty system undoubtedly owes much of its success to the method of entry by Civil Service examination, though there is still room for improvement in this respect. "The beginning is the main thing," says Plato, and, as the same philosopher has shown, the beginning must be determined by an intelligent anticipation of the end. The end kept in view by the Admiralty and their advisers is to train good officers

and designers of ships, and also good workmen and builders of ships, and this implies also physical and moral fitness. To this end the apprentices are first selected by a severely competitive examination, coupled with a strict medical test, and the Admiralty attracts candidates by offering what practically amounts to security of employment, with fair wages, free education, and opportunities of promotion.

It is not surprising that such apprenticeships are much sought after, the competition at the present time being about five candidates to each appointment offered, whilst the competition for the position of naval boy artificer amounts to no less than fifteen candidates to each appointment. Hundreds of boys in the dockyard towns are trained from their earliest years with a view to becoming dockyard apprentices, and the cumulative effect of this for upwards of half a century has been to raise greatly the educational standard of the boys in these towns. From the elementary schools they pass to the secondary schools or good private schools, and thence, if they are successful, to the dockyard schools. Once entered in the dockyard, the young apprentice has a clear path before him, and as he looks into the future along the path which so many of his fellow-townsmen have trodden before him, his imagination is fired by the achievements of such distinguished men as Sir Edward Reed, Sir Nathaniel Barnaby, Sir William Pearce, Sir William White, Sir Philip Watts, and a host of others too numerous to mention here; whilst in the background there is always the comfortable assurance that if he does his duty he need not fear the miseries of unemployment, because he will be given some position according to his success in studies and the esteem in which he is held by his officers.

The entrance examination is open to all British lads between fourteen and sixteen years of age, the candidates being chiefly drawn from the dockyard towns. There is no doubt that boys at fourteen years of age are rather too young to commence an apprenticeship with the greatest advantage to themselves and their employers; it would be better if the age were raised to fifteen years, thus bringing the dockyard apprentices into line with the boy artificers, boy clerks, and male learners in the Post Office.

The subjects of the entrance examination are handwriting, orthography, English composition, geography, arithmetic, mathematics, elementary science, and drawing. These subjects are continued and developed to a higher standard in the dockyard school, and trigonometry, mechanics, English literature, and history are added. French was formerly a subject of study, but has now been dropped. The upper division course, extending over the third and fourth years, includes more advanced mathematics, mechanics, and physics, with applied mechanics, metallurgy, and mechanical drawing. The practical subjects are naval architecture for the shipwright apprentices and engineering in its various branches for the fitter apprentices.

The apprentices attend school for eleven hours each week, partly in the afternoons and partly in the evenings. The keener students also spend a great part of their leisure time in study. It should be added here that attendance at school for four years is not compulsory for the whole of the apprentices, some of the least successful students being sent away from school at the end of the first, the second, and the third years, respectively, but attendance for the first year is compulsory for every apprentice.

The new system of entering and training naval boy artificers, introduced in 1904, is a thoroughly organised development of the dockyard system, specially adapted to the training of boys for the Navy. The four years' course for the boy artificers is similar to that for dockyard apprentices, including practical work under skilled officers, and teaching in mathematics, English, mechanics, elementary science, electricity and magnetism, applied mechanics, mechanism, mechanical drawing, and the theory of workshop practice.

The boys attend school in the evenings after hard manual work during the day under the most exacting conditions of naval discipline; in this respect the system is bad, and could never be successful were it not that the boys are of high ability and good physique, and that they have been previously trained in good schools. It would be a great improvement in the training of boy artificers if some of the school work were done during the day, and more leisure were allowed for private study, the period of the course being increased to five years if necessary.

Various attempts have been made by private employers to give their apprentices some advantages similar to those enjoyed by the dockyard apprentices. For many years the shipbuilding apprentices of Dumbarton and other northern towns have been encouraged to continue their education by attending local science classes, and more recently a scheme for the education of the shipbuilding apprentices of the Thames has been developed, chiefly under the influence of Sir William White, who was himself a dockyard apprentice. The London and South-Western Railway Company has adopted a scheme of education for their apprentices at Nine Elms by giving them time in the mornings to attend the Battersea Polytechnic Institute, and the Great Western Railway has a well-developed system for the education of their apprentices. At Swindon the apprentices are sent to the Technical Institute for about six hours per week, and are allowed time during the day for this purpose. The Great Western Railway Company grants free studentships to not more than thirty apprentices at any one time, the school fees being paid by the company, and also the wages for the time the apprentices attend school. The studies include mathematics, mechanics, geometrical and machine drawing, physics, and chemistry. Students who distinguish themselves are allowed to spend part of their last year in the drawing office or chemical laboratory. There is no fixed standard of education for

the entry of apprentices, but the company grants special privileges to apprentices who have previously attended the local secondary school for four years.

Excellent as these private systems of education may be, they all fall short of the Admiralty system in some one or more particulars. Here are summarised the chief elements which have contributed to the success of the Admiralty system for dockyard apprentices.

(i) An open competitive examination for entry, which has gradually raised the standard of education for boys in dockyard towns.

(ii) A continued education, *free, compulsory,* and *for all.*

(iii) A total absence of any preferential treatment, except such as is fairly earned by superior character and ability.

(iv) A school course combining general education with technical studies, in addition to a training in the use of tools and a varied experience of all the different branches of practical work.

(v) A liberal allowance of time for school attendance in the day-time, as well as in the evenings (about eleven hours each week), extending over a sufficiently long period (four years).

(vi) A system of selection by examination for superior positions, which practically ensures promotion to young men of the best character and highest ability who continue their studies.

(vii) Employment for all, or nearly all, those who have completed their apprenticeship.

Would that our legislators could be convinced that in this system of compulsory continued education carried on side by side with industrial training lies the solution of many of the labour problems of our country.

At the present time many employers engage young people simply to make profit out of them, either because they receive high premiums for which they give little in return, or because, in the absence of premiums, the boys and girls provide cheap labour, and may be discharged after a few years, uneducated and inexperienced, to swell the ranks of the unemployed. Money has been spent on large educational institutions, such as polytechnics or technical institutes, but these are empty or poorly attended during the day-time, because the employers, who alone have the power to fill them, do not send their apprentices there.

Employment of young persons should be made illegal unless they are working in the capacity of apprentices or learners of industry, and then their education, both practical and theoretical, should be compulsory. Government grants could be given to employers, particularly to municipal corporations and large companies, to induce them to provide facilities for the training of apprentices in the day-time, as well as in the evenings, and, as a condition of obtaining the grant, the whole of the education and training should be placed under Government inspection and control. It should be the duties of the inspectors to determine the educational standard to be required on commencing the apprenticeship, the course of practical and theoretical studies to be taken up in the workshops and at the local institute or continuation school, and to ensure that the conditions of employment do not make it impossible or extremely difficult for the apprentices to study successfully.

Such a scheme may at first appear drastic, but it involves no new principle of legislation, because the employment of young persons is already regulated by the Factory Acts, and the principle of giving grants in aid of technical education is fully established. Moreover, many employers do not need Government grants or legal compulsion; they require only expert advice. Such a national system as this would in a few years raise the educational standard throughout the kingdom, and enormously increase the industrial efficiency of the nation. If the Government wishes to reduce the ranks of unskilled labour, and combat the evils of unemployment, it must legislate for the boys and girls who are just leaving school and entering various departments of industry. In introducing any such scheme there is no need to grope in the dark; we have before us a model, "English from beginning to end," as Sir William White has remarked.

The Admiralty system is no longer in the experimental stage; it has been tried for sixty-five years and proved to be an unqualified success. It has supplied to the nation nearly all the distinguished naval architects and engineers, not only in the Admiralty service, but in many of the private firms. If Great Britain at the present day holds any pre-eminence in shipbuilding, it is not too much to say that this result, which is of such vital importance to the nation, is largely due to the Admiralty system of training apprentices. A similar system, extended until it became general and national, would do as much or more for every other industry, and at the same time raise the moral and intellectual standard of the people.

THE PLACE OF ETYMOLOGY IN THE TEACHING OF ENGLISH.

By JAMES OLIPHANT, M.A., F.R.S.E.

IT would seem from recent reports on the results of public examinations in English that our schools are paying scant attention to the study of the history of words. In this matter we are still moved by conflicting currents of opinion. On the one hand, the reaction from the almost superstitious regard for the mere symbols of thought, which was the mark of Renascence scholarship, has not yet fully spent itself; there is still a nervous fear that (to use Mulcaster's words) "in lingering over language we may be removed and kept back one degree further from sound knowledge." On the other hand, the application of scientific methods to philology has vindicated for language an important place as a product of organic development, throwing light on the mental history of the race. But insistence on this point

of view has brought about a further reaction, in the movement towards the treatment of literary masterpieces rather as material for artistic appreciation than for the pursuit of linguistic knowledge. It is not easy for educational theory to keep a steady course under so many contrary influences, but some solution may be sought that will reconcile opposing claims. How is justice to be done to the study of words as historical records, without attaching too much value to their symbolic significance, and at the same time without obscuring their use as the most widely-spread means of artistic expression?

The large share in the school curriculum that is taken up with foreign tongues, ancient and modern, is naturally a hindrance to a systematic study of English philology; it is felt that when so much time is already spent in studying words principally in their formal aspect, it is very desirable to treat the mother-tongue, so far as possible, rather on its literary side. But in schools where the English lessons are given a reasonable place it should not be impossible to introduce a certain amount of historical and scientific study of the language without distracting attention unduly from its more practical and æsthetic uses. Before suggesting more fully the reasons for making such provision, however, it must be explained that the kind of teaching contemplated is not merely the study of the derivation of isolated words—though treatment of this unsystematic nature may be turned to good account in skilful hands—but rather an inquiry into the history of the English language as illustrated by the changes in its grammar and vocabulary. It is not suggested, of course, that in any but the most advanced portion of the secondary-school course the inquiry should deal minutely with obsolete forms of English words, or with the principles of comparative philology; whatever may be done in the later years of specialisation, the boy or girl of sixteen who has only followed a general course of study cannot be expected to know more than the broad outlines of the subject. But the treatment, so far as it goes, should follow scientific lines.

It may now be asked: What is the value of a study of English etymology? Too much must not be claimed for it as an aid to a correct and intelligent use of the mother tongue. It is true that a knowledge of the original meaning of a word may sometimes be helpful in suggesting its proper application, but such cases are few and far between, and much safer guidance could always be obtained from the usage of the best contemporary writers. There are, however, several reasons that rest on a sure foundation:

1. The history of the English language is in a very special sense a part of the general history of the English nation. Probably in no other case have the leading political and social changes been so definitely related to the progressive phases of the nation's speech. The place that is held in our blood and in our traditions by Celt and Roman, by Saxon and Dane and Norman-French, can in no way be more aptly demonstrated than by the traces that these elements have left upon our language. The general facts about English etymology must be regarded, then, as an integral part of our historical records.

2. Even apart from its relation to our general national history, English etymology may reasonably be studied as satisfying a natural interest in all that concerns the building up of that literature of which we are so justly proud. Appreciation of the finished edifice cannot but be enhanced by a closer understanding of the nature of the material of which it is composed. In this connection it is worthy of note that the learned president of the newly founded Simplified Spelling Association rules out of court all opinions on the important question of reforming our written language which are not based on some knowledge of its history.

3. Though the words that form our language had never been turned to high artistic account, the fact would remain that they are instruments of which we must make daily use, and while, as has been said, a knowledge of their structure might not enable us to use them more effectively, the value of acquiring such knowledge may be urged on broad educational grounds. We wish children to begin their investigations of the universe with what lies nearest to their hand, and nothing is more readily available than the words they are constantly hearing and uttering. It may be objected that it is the things themselves, and not their names, that should be made the object of study, but this is a shallow argument. Words are not only symbols; in a very real sense they are also things. Indeed, they constitute an even more important part of the environment than the material of the inorganic world, for they form the chief channel by which the subtler and stronger social influences are impressed on the individual. Though it is the more or less arbitrary meaning that is attached to these signs which is of most consequence in the transmission of such influences, the signs themselves have to be reckoned with as objective facts. They have even the advantage of making as direct an appeal to the senses, and demanding as genuine an effort of physical activity, as any other objects of the outer world that can be presented to children for observation and experiment; for whether we are dealing with the original spoken language that involves the intelligent training of ear and tongue, or the derived written language that taxes the eye and the hand, we are alike in the region of sense perception and personal initiative, where the fullest opportunity for early educational guidance lies.

It may be said that children can be taught to speak and understand, and read and write, without knowing anything of the origin and history of the words that are used. It is true that they may learn to employ tools of this kind, as of any other kind, for ulterior purposes only; but the fact remains that the tools themselves are among the

most obtrusive constituents of their environment, and on that account they deserve that the natural spirit of inquiry should be turned upon them when the fitting occasion appears. It is not suggested that the etymological study of words is one of the earliest to which the attention of children should be directed; the subject is not quite simple enough for that. Language is a human and a social product, and shares in the complexity that belongs to all the reactions of the individual organism under the pressure of the social environment. Even in its elements the study is hardly suitable for the opening years of school life, yet it is a pity to allow too long a time to elapse before at least suggesting that the words which are used so unreflectingly by children as mere counters have an independent significance which it will one day be worth while to consider. The symbolic use of words becomes so habitual that the curiosity which would be natural in regard to their real character is not aroused. Familiarity, in this case, breeds an unconsciousness which may last undisturbed through the whole of life, unless pains are taken to stimulate interest by presenting the subject in a fresh light. It is remarkable how the mechanical use of words in their conventional meanings can deaden all natural curiosity as to their origin, such as would be felt about any phenomena which were faced for the first time at an age when their nature could be understood. At a recent public examination for schoolboys and schoolgirls of about fifteen years of age, it was found that out of several hundred candidates not a single one knew that *metropolis* meant *mother-city*, yet almost all of them lived in or near London, where the words *metropolis* and *metropolitan* must have been constantly staring them in the face. A claim may surely be made that throughout the years of a secondary-school course, at least, some attention should be drawn to the fact that words have an independent existence—that they are, in fact, objects in our surroundings of which it is natural to seek a scientific explanation. The competent teacher should even be able to show how the changes that have taken place in the forms and meanings of words exemplify not only the general laws of evolution—the processes of integration and differentiation—but the special forms which these laws assume in biological phenomena—the physiological economy of labour, &c.

4. There is a further value in the study of etymology which it is not very easy to keep separate from those that have been already urged, but which is nevertheless distinct from them. Words are not only symbols of thoughts and things, to be used as counters in daily communication and as the medium of artistic expression; they are not only objective phenomena, illustrating laws that are at once distinctive of a special class of organic products and in conformity with the widest generalisations of science; they are also monuments of the growth of the human spirit, visible records of the inner workings of the mind and soul. This psychological significance will hardly be questioned, but it will perhaps be doubted whether it can be taken into account in connection with such study of etymology as could well be offered in the secondary school. The answer must be that while such insight would for the most part be only incidental and occasional, opportunities could fitly be made to utilise it in a more or less systematic way, especially in correlation with historical study.

It remains to consider shortly the best methods of teaching etymology as part of a general English course. This is one of those studies where an unsystematic beginning is to be preferred. The interest in the subject, which it must be the first aim to create, will arise most readily if the material comes naturally to hand, and if the children are associated so far as possible in carrying on the investigations. There is no better plan than for the teacher to select for study a few words from the reading lesson for the day; almost every sentence will afford the necessary range of choice. The aim will of course be to pick out words that have had an eventful history, as regards form or meaning, or both, and to introduce as much variety of origin as possible. It will generally be easy to get the children to guess at the earlier meanings by thinking of other words, in English or in any other language with which they have some acquaintance, that are similar in sound or appearance. They will not often be able to do much in conjecturing the earlier *forms* of the words, but at least they can be interested in finding reasons, psychological and physiological, for the changes that have occurred, both in form and meaning, when these changes are put before them. Sometimes the process may with advantage be reversed, the original form being given, and the children being left to think out the word into which it has developed. It will be a pleasing discovery, for example, that the three Old English words, *ne an wiht*, the meaning of which can be explained to them, have been transformed into the modern word *not*, and a lively interest will be taken in conjecturing and accounting for the various stages in the process. The different sources of our words, and the foreign influences on the language generally, should be indicated, and explained up to a certain point, as occasion arises, and every chance should be taken of relating such information to the knowledge of English history that is already possessed by the pupils; but there is no need to enter upon a systematic study of the history of the language before the age of fourteen or fifteen, and even then it should be for a time of a very general character. A good deal of material should be accumulated, with just enough of historical explanation to make the study of individual words intelligent, before any wide synthesis is attempted. Towards the end of the English course some historical study of the language may with advantage be associated with the reading of an author such as Chaucer, but any detailed study of Old English grammar should be left to the period of specialisation.

THE EQUIPMENT OF A HISTORY ROOM.

By E. BRUCE FORREST, M.A.
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HISTORY teaching in English schools is rapidly taking its proper place in relation to the great general improvement of modern times in historical research and exposition. Little, however, has as yet been done to provide for it an appropriate atmosphere and to extend to it concrete methods. The progress is shown chiefly in improved text-books and courses and in the use of source-books.

There are undoubtedly a number of instances of individual efforts to devise concrete methods and a true atmosphere. Yet these are far from comprehensive, and do not on the whole belong to our general system of schools. For example, inquiries through the Historical Association have failed to discover a history room in any London school, although many teachers express the view that something should be done in this direction.

As regards details, opinion and practice certainly favour the idea. At one great public school lantern-slides are used largely; at another time-charts are in vogue; at a third wall decorations are in great favour. At Oxford the writer has found authoritative views strongly in support of all the devices mentioned. Finally, Principal Childs, of Reading, is actually in course of developing a history room, to which the present article is much indebted. It contains portraits, plans, maps, time-chart, &c., but does not involve the use of lantern-slides.

There is, then, an increasing amount of limited experiment and of authoritative support in regard to this phase of history teaching. Is it not desirable that some attempt should be made in inspected secondary schools, and especially in those which contain a number of future teachers amongst their pupils, to establish history rooms, fitted up on broad but inexpensive lines, and co-ordinating methods of influencing and invigorating, in relation to history, the interest, the imagination, and the intellect of scholars? This seems all the more true when we reflect upon the broader values of the study of history and its allied subjects. For the moral and practical influence of acquaintance with great men, with the story of national achievement and progress, and with the records of the rise and fall of causes, powers, and empires will provide the best antidote to the evils otherwise inevitable in an extensive system of State- and rate-aided education.

The successful working out of the experiment suggested must for the present be much hampered by circumstances. The supply of wall-maps, charts, diagrams, reproductions of historical engravings, prints, pictures, and statuary is so imperfect, inaccurate, and variable in form and merit that its defects compel many gaps in any scheme. Still, a practical attempt to carry out a scheme and a definite demonstration of the existence of these deficiencies will be the best means of removing them.

Every plan is limited also by the wall space at disposal and by the structure of the proposed history room. In the ensuing remarks a typical class-room, having two walls available for general history and a third for local history, will be dealt with.

The following are the chief forms of decoration, illustration, &c., which may be utilised:

(1) Time-charts—(*a*) on the walls on a large scale; (*b*) in the hands of pupils on a small scale and in more detail.

(2) Maps, plans, diagrams, &c.

(3) Portraits.

(4) Series of progressive and authentic representations of objects of historical interest; *e.g.*, of vessels and other typical products of civilisation.

(5) Facsimiles of documents.

(6) A very limited collection of reprints of actual documents.

(7) Lantern-slides.

(8) Stand and frame for holding illustrations arranged for particular lessons.

When the room is completed a history prefect should be appointed, and the room left open to pupils at fixed times.

TIME-CHART FOR THE WALLS.—"What is needed is that time relations should receive a vivid and

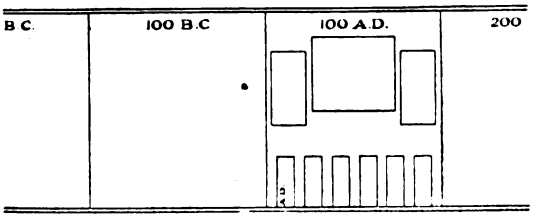

FIG. 1.

enduring representation in space."[1] This time-chart is the first requisite. It must be very simple, and should form a basis for the whole scheme of wall decoration. In size and arrangement it will be conditioned absolutely by the dimensions of the history room, and the following proposal is adapted to a room with two walls available, having a combined length of about 36 ft. A light frame should be constructed of canvas, stretched upon parallel wooden supports, painted white and varnished. It should stretch round the walls of the history room, be about 1 ft. 9 in. deep and 4 ft. to 5 ft. from the ground at its lower edge. Perpendicular lines would divide the frame into sections a foot and a half long, and each representing a century. Figures denoting the particular century to which it applies should be painted clearly at the head of each section. The parallels should project above the surface of the canvas, and the lower one should be grooved to allow of the insertion of tablets, stating the chief events, movements, &c., in the various centuries. Small maps and illustrations could be hung on the chart (Fig. 1).

[1] Memorandum of the Scotch Education Department, on the Systematic Study of History.

The length of 36 ft. mentioned above would allow a representation of twenty-four centuries, say 500 B.C. to 1900 A.D. The age of Pericles, the great days of the Roman Republic and Empire would thus be included. Unfortunately the chart would not refer to the ancient empires of the East nor to records of prehistoric civilisation. The frame might be extended or the sections reduced in size in order to include a wider range of time. Yet it would be very inadvisable to cramp the chart; the greater the scale, the better the result.

The cost would be about 2*s*. a foot; say for 36 ft. £3 12*s*. This would exclude a further sum of £1 8*s*. for writing in the centuries, making the divisions between them, and fixing the chart. The history master would himself in course of time make out and insert events and movements tablets, made of cardboard.

TIME-CHARTS FOR PUPILS.—Nothing satisfactory is on the market. Exercise books of a special type would be required. The pages should be ruled with a few horizontal and perpendicular lines and be of a rather large size. They should

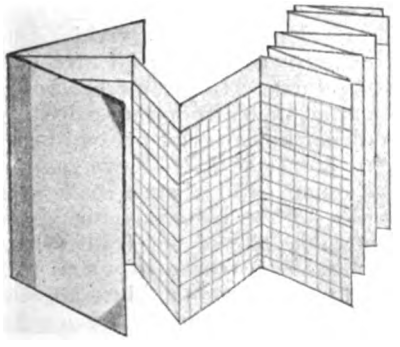

FIG. 2.

be attached to one another, so that they might be unfolded and stretched out flat like a pocket-map (Fig. 2). One such book should be issued to each pupil each term. In it should be inserted, in chronological order and grouped in certain main subject divisions, the chief facts of the history studied for the term. At the end of each year pupils would thus possess three bound sheets, which, when placed end to end, would give a continuous and clear vision of the whole of the work done. At the end of their school career they would possess a series of such time-charts which would be invaluable to them.

MAPS, PLANS, DIAGRAMS.—The supply of these is far from perfect. A committee of the Historical Association has been for some time preparing a report on the subject, but it is apparently not yet completed.

Wall Maps.—There is no really satisfactory English series. The physical maps in the geography room, if the school possesses one, would supply many needs, presuming that an arrangement can be made for their joint use for history and geography. They would be especially valuable in dealing with military history, and, indeed, for most purposes would be far better than the old style of political history map. Inquiries made by the writer in Germany and Austria, about historical maps, have not hitherto produced satisfactory results. An American series, MacCoun's "Historical Geography Charts of Europe," appears to be a useful production. The set of nineteen mediæval and modern charts, each 42 in. by 53 in., cost $15. This is, however, especially a direction in which teachers need to exert themselves in order to improve the supply.

Atlas Maps.—A small map should be framed and hung in the space on the time-chart for each century. It would be desirable to purchase for this end a proportion of the maps in the "Historical Atlas of Modern Europe," published by the Oxford University Press. If we were to confine ourselves to the maps illustrating Europe and her colonies and to framing twenty of these at, say, 2*s*. each, the gross cost would be £3 15*s*. This would give a supply of maps from the fourth to the nineteenth centuries A.D. It is not easy to find a suitable series for the preceding eight centuries. Kiepert's "Atlas Antiquus," for example, contains both more and less than is required. Presuming, in default of better, it were obtained, the cost, including the framing of eight of the maps, would be about £1 2*s*.

Plans and diagrams would have to be acquired gradually from various sources. Some might be constructed by pupils themselves. There is no series the purchase of which can be recommended. A supply of large blank outline maps would be necessary for the illustration of particular questions.

PORTRAITS.—Carlyle has written:

> In all my poor historical investigations it has been, and always is, one of the most primary wants to procure a bodily likeness of the personage inquired after; a good Portrait, if one exists, failing that, even an indifferent if sincere one. In short, any representation made by a faithful human creature of that Face and Figure, which *he* saw with his eyes, and which I can never see with mine, is now valuable to me and much better than none at all. This, which is my own deep experience, I believe to be in a deeper or less deep degree the universal one.

Dr. Hodgkin has said:

> To this day I always see the English kings in the same order and very much in the same garb in which I saw them when, as a child, I "put up" a dissected puzzle. . . . The pictures were really well-executed reproductions on a small scale of Virtue's well-known portraits. . . . I have often wished I had anything like as clear a mental view of the kings of Scotland and of France.

A number of small portraits is much preferable to a few large ones. Pictures of about 5 in. by 7½ in., framed close in dark ¾-in. frames, show up very well. A large selection can be obtained at various prices from 9*d*., unframed. Frames cost from 1*s*. 3*d*. to 2*s*. each. Owing to the limited range of the supply, it might be well to suggest the purchase of two batches of portraits, referring to (*a*) Greece and Rome, (*b*) England from 1066 to 1900.

As examples of what is available relating to Greece and Rome, at prices averaging 3*s.* 4*d.* framed and 2*s.* unframed, we may mention pictures representing:

Pericles, Sophocles, Alexander, Demosthenes, Junius Brutus, Julius Caesar, Cicero, Mark Antony, Augustus, Tiberius, Nero, Trajan, Hadrian, Marcus Aurelius, Caracalla, Alexander Severus, &c.

Instances of portraits illustrating English history from 1066 to 1900, to be purchased at 9*d.* and 1*s.* unframed and 2*s.* framed, are representations of:

William I., William II., Henry I., Henry II., Henry III., Edward III., the Black Prince, Chaucer, Wycliffe, Henry IV., Henry V., Henry VI., Edward IV., Edward V., Richard III., Caxton, Henry VII., Henry VIII., Edward VI., Mary, Elizabeth, Colet, Wolsey, Fisher, More, Cranmer, Luther, Drake, Raleigh, Charles I., Charles II., James II., Laud, Wentworth, Cromwell, Hampden, Pym, Milton, Hyde, Monmouth, Marlborough, Anne, Swift, Walpole, Chatham, Clive, Burke, Fox, Pitt, Nelson, George I., George II., George III., George IV., Wellington, Brougham, Russell, Canning, Melbourne, Cobden, Peel, Palmerston, Gladstone.

The suggested English list would include something for every century from the eleventh to the nineteenth. As an example of what might be added to it, there can be mentioned the well-known pictures of the "Interior of the House of Lords, 1742," and the "Interior of the House of Commons, 1742," which cost 4*s.* 9*d.* each framed.

In criticising the above selection, it must be remembered that it does not in any way profess to be an ideal one. It is limited strictly by what can be procured at a price suitable for schools and by what is a reasonable maximum cost. In particular the great gap between the third and the eleventh centuries, between Rome and England under the Normans, is most unfortunate, but it cannot at present be avoided. Further, the number of portraits has not been extended very far, nor does it, as it should, include pictures of Continental celebrities. The gross price, including framing, of the two groups suggested would be roughly £9 10*s.*

SERIES OF PICTURES.—A beginning might be made with a few pictures representing two series. For instance:

Buildings.—Here a possible list would be the Temple of Philae, the Temple of Poseidon at Paestum, the Parthenon, the Monument of Lysicrates, the Colosseum, the Arch of Titus, Trajan's Column and Forum, the Pantheon, the Arch of Constantine, the Church of St. Paul outside the walls of Rome, the Church of the Hagia Sophia (Constantinople), St. Mark's (Venice), the Cathedral and Leaning Tower (Pisa), Canterbury Cathedral, Worcester Cathedral, Lichfield Cathedral, Gloucester Cathedral, St. Peter's (Rome), and St. Paul's Cathedral.

These pictures may be obtained from various firms and at various prices, ranging from 6*d.* upwards. The same remarks apply to them as to the series of portraits. A well-arranged group representing domestic architecture would perhaps be more valuable. But it would be difficult to acquire, above all, under the necessary conditions of cheapness.

Ships.—Here, as in the case of buildings, it is extremely hard to discover at a moderate price any satisfactory single series, uniform in style, size, and price. The Navy League, for example, could give no information of any kind. It is necessary to collect a few isolated examples from various productions and to look forward to the gradual filling in of gaps. No cheap illustrations of Greek and Roman boats appear to be obtainable. One might begin with a Viking ship, and make something like the following the nucleus of a future collection:

A Viking ship, and William the Conqueror, crossing the Channel (Messrs. H. Marshall and Son); the Ark Raleigh (Art for Schools Association); a selection from Britannia's Bulwarks (Messrs. George Newnes, Ltd.), containing, for example, pictures of the *Queen*, 1225, the *Crescent*, 1793, the *Queen*, 1845; a photograph of a modern battleship —*e.g.*, the *Royal Sovereign*.

The cost of this small group of illustrations would be about 25*s.*

FACSIMILES.—Many brief, vivid documents, such, for instance, as the appeal of the Duke of Monmouth to James II. for mercy, can now be purchased in facsimile from the British Museum and the Bodleian Libraries at prices ranging from 6*d.* to 3*d.* each. It is difficult to exaggerate the value to the young pupil of such realistic and succinct examples of the materials for history. As many as possible should be framed and hung beside the portraits of those to whom they refer. Others should be used to illustrate particular lessons. The following might be purchased:

(*a*) British Museum. Facsimiles of Autographs. First Series. Second Edition. (Thirty in number, from Queen Katharine to Queen Victoria.) 7*s.* 6*d.* Fifth Series. (Thirty-two in number, from Henry VIII. to W. E. Gladstone.) 7*s.* 6*d.* (*b*) Bodleian Library. Dying Declaration of Duke of Monmouth, 1685, 1*s.*; Caxton's Advertisement, 1477, 6*d.*; Epistola de insulis noviter repertis, about 1493, 1*s.* Presuming that a dozen of these were framed, the additional cost would be, say, 18*s.*

REPRINTS OF ACTUAL DOCUMENTS.—The elaborate use of original authorities does not come within the functions of the schoolmaster. Yet the possession of a small collection of Government papers is important for an occasional lesson or essay, in the case of older boys, to exemplify and elucidate the processes of legislation and administration. If possible, this collection should apply to the particular circumstances of the school. If, for example, the school numbers many prospective teachers amongst its scholars, it would be well to centre this supply of documents round the Education Act of 1870, and to purchase, say, the Report of the Education Commission, 1859–60, Vols. I. and VI. (Report and Evidence); the Education Bill of 1870, as introduced; the Education Act of 1870; and the First Code issued

after the passing of the Act of 1870. If two dozen copies of the last three documents were obtained, the total price of all these papers would be, according to quotations received from Messrs. Eyre and Spottiswoode, £1 13*s*. It would be advisable, perhaps, to add a copy of Circular 86 of 1870, giving instructions as to the carrying out of the Education Act of that year. The number of these Government papers might be extended gradually. Valuable additions would be "The Report on the Employment of Children, 1833" (First Report, 11*s*. 6*d*.) and the Reform Act of 1867 (1*s*. 2½*d*.).

The above suggestions have in mind a school where the history course for the sixth form lays special stress on the nineteenth century, and, as already suggested, would need adaptation to particular cases.

LANTERN-SLIDES.—As Dr. Hodgkin has written: "For no age or condition of students ought we to shrink from using the means placed at our disposal by the useful invention of lantern-slides." These should, however, not be used as a frequent method of instruction. Their chief value lies in their occasional use for summarising and revising the work of some weeks or for elucidating particular points. A large supply is available from many well-known firms—*e.g.*, Messrs. Newton, Wilson, Phillips, Wood, &c.—at prices as low as 1*s*. and 1*s*. 6*d*. each. A small collection should be chosen to cover a wide range of time, and as a basis for the revision of a considerable amount of work. This initial collection should also help to remove deficiencies in the supply of maps and illustrations.

It is presumed that the school would possess a lantern, as so many schools now do for geography work, and that an arrangement could be made for the occasional use of it by the history master.

STAND AND FRAME.—A large square frame, similar in construction to the time-chart, should be made. It should be attached to a stand, such as those used for wall maps, and made a basis for illustrations of particular lessons. Apart from new purchases and those already suggested, cuttings of various kinds, publishers' circulars, advertisements of books, &c., would in course of time add considerably to the school supply of materials for this purpose.

LOCAL HISTORY.—The scheme of wall decoration would not be complete without some special reference to local history. A few suggestions may perhaps be made, specially relating to London. "Maps of Old London," published by Messrs. A. and C. Black, should be obtained. It contains fourteen maps and plans of Old London from the middle of the sixteenth to the middle of the eighteenth century. The price is 5*s*. There are many series of picture postcards which would form a valuable addition to these maps. The Old Print Series of Old London Picture Postcards, published by the London Etching Co., may be mentioned. The cost of the series of four sets, with six postcards in each set, is 2*s*. 6*d*. These postcards are very effective, and could be framed very cheaply in sets of three at 2*s*. the set. It would be necessary to add at least a typical photograph or two illustrating modern London.

SUMMARY OF SCHEME OF DECORATION.—The general scheme of wall decoration would then be as follows. First would come the time-chart, with its broad indications of the general course of events and its illustrative maps, pictures, &c. Next, the series of portraits of monarchs, soldiers, churchmen, statesmen, &c., would be arranged so far as possible in a continuous line above the time-chart. Interspersed with these would be a number of framed facsimiles, illustrating the careers of those depicted in the portraits. Above the portraits would come a line of architectural illustrations, and above these the progressive illustrations of vessels. Everything should be hung so that it could easily be removed for use in a particular lesson or for rearrangement as the series becomes more complete. Beside the teacher would be two stands, one for holding a map, the other for the frame, carrying illustrations for the lesson in progress.

A separate wall would have to be reserved for local history illustrations.

SUMMARY OF ESTIMATES.—Exact estimates are difficult to effect owing to the imperfect nature of the supply, the variety of directions from which it must be obtained, the differing sizes of pictures, and, above all, the lack of precedent. The cost of fitting up a room, according to the scheme here described, would work out as follows:

	£	*s*.	*d*.
Time-chart in sections, sized, varnished, lined, &c., 36 feet	3	12	0
Cost of lettering and figuring on same		18	0
Cost of fitting		10	0
Maps, large size	3	3	0
Maps, small size, partly framed	4	17	0
Portraits, framed	9	10	0
Pictures of (i) buildings, framed	3	0	0
(ii) ships, framed	1	5	0
Facsimiles, partly framed	1	15	0
Documents	2	5	0
Lantern-slides (say 150 to 100), say	7	10	0
Illustrations for local history, say...	5	0	0
Canvas frame for illustrations, say	1	0	0
Sundry expenses in connection with the arrangement of the pictures, &c., say		15	0
Total	45	0	0

No reference has been made to the cost of notebooks, cupboard, blackboard, and map-stands, since these are part of the ordinary furniture and stationery equipment of a school. Moreover, it should again perhaps be stated clearly that the above estimate is on no ideal basis, but applies only to the limited scheme for equipping a history room, which has been sketched out. It has also been restricted throughout by an endeavour to keep within a reasonable maximum expenditure. It would, in fact, be desirable that much more should be spent on the portraits and the pictures of buildings and ships in order to bring out their full value, and that adequate provision should at least be made for an extension of the wall time-chart.

THE UTILITY OF PRACTICAL GEOGRAPHY IN SCHOOLS.

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IN these days, when geography has become scientific, when the manner of teaching should be to develop the argument from cause to effect, definite plans must be made to teach so as to raise sufficient curiosity in the pupil to impel him to search out facts and arguments for himself. The teacher ceases to be a purveyor of facts to a stolid recipient, and becomes like a guide to an enthusiastic mountaineer.

We learn by our own activity; what general notions we have thought out for ourselves, we know and can use; what we are told and do not think about does not become part of our knowledge nor in any degree our own. Consequently, geography—as all else—is best taught by those methods which secure the continuous activity of the learner. The general notion formed and the name invented or discovered by the child himself become thereby of real value. It follows that geography must be taught practically; the pupil must experiment, must observe and form conclusions, must correct imperfect conclusions with later knowledge, and must imagine for himself a real earth. For this purpose he must begin with the area he can see and visit—his own district—and, having measured this, use it as a unit by which to measure the remainder. Geography as a science largely means measurement, and in the process of measuring the world of to-day it leads gradually to the idea of measuring the world of yesterday, and leads the child to history as the measurement of the past.

The earth is to be measured in terms of the home area; but how? What shall be measured, and with what? Shall the measurement be haphazard, or by plan? Shall the child follow instructions during his school life, and at the end be bewildered in face of the problems of his adolescence from lack of guidance? Such questions reach the root of the matter for the teacher, and are answered by his determination that the problems faced by the child shall be the same in kind, if not in degree, as the problems faced by the man: the sources of information shall throughout be the same.

The available information on the subject-matter of geography occurs in three forms: in the atlas, in the gazetteer or newspaper, and in books of travel—the records of the observer on the spot. These sources suffice for the needs of the man in practically all the circumstances which compel his attention to geographical notions; assuredly, then, they should suffice for the man-in-embryo. The adult mind appeals to these sources of information for assistance in determining a given problem; surely the child should appeal to the same sources from the same motive, for help towards the solution of a definite problem. The adult confirms his ideas by discussion; the child should do the same. The course in geography should make habitual an appeal to the sources indicated, and this appeal should have become so habitual that the pupil is confident in the accuracy of the deductions which he makes; confidence and self-reliance are matters of habit.

Teaching geography is, therefore, necessarily concerned with the reading of maps, with consulting gazetteers, the interpretation of written accounts of lands and scenes which do not come within the personal experience; and such work must be "practical"; the aim must be the solution of definite problems in definite terms.

Consider these heads in turn. The available atlases contain political, physical, meteorological, commercial, and historical data. The child is to be able to read such maps; to do this he must understand how such records are made. Consequently, he must make plans, he must measure boundaries, he must "triangulate," in order to appreciate the meaning of the marks on a political map. He must then have exercises on measuring lengths, areas, &c., on the scale of the map, so as to appreciate matters of size and relative proportion. He is to use an orographical map, to read signs for relief, for rivers, lakes, &c.; before he can appreciate these he must have observed running water, must have made a contoured plan, must have attempted as a practical exercise to show measured heights at the same time as measured lengths and widths. He must know from his own work how contours go to show a ridge or a valley. Naturally, his early attempts do not result in a map which rivals the Ordnance Survey map of his district. Sufficient to the power of the child is the difficulty of the problem he must solve. So with a climate map, showing isotherms, &c.; before he reads these he must have read a thermometer, have made temperature curves, have obtained temperature records for other places; he must have averaged records so as to facilitate comparison. The name and the thing—isotherm—must represent to him the idea of many measurements by many observers, some calculation, and some draughtsmanship. Further, the necessity for such lines, as a means whereby he may compare his district with other districts, and the warmth of to-day with the warmth of a day some time ago, must be obvious.

Training in the reading of maps will, therefore, embody two forms of effort by the child: first, the making of simple kinds of maps as a means of recording or representing some facts of which a record is necessary; and, secondly, a series of exercises on such maps so as to lead to their interpretation and use with intelligence; and all by the child himself, not on a blackboard by his teacher, not in a book by some person whom he has never seen; and, moreover, all this in reply to some need, some feeling of necessity that he should know what all these signs and names imply. The curiosity of the child is the stimulus which makes his effort possible.

The exercises which precede the use of commercial maps should arouse in the child-mind the questions of "why" and "when." These

questions will be propounded to the teacher, and thus give him the necessary opportunity to introduce the idea of a gazetteer or work of reference as an indispensable complement to an atlas. The simple form of gazetteer which usually forms the index to the atlas will be first used, and after the habit of reference has been acquired, the use of other works becomes natural, and the questions of "why" and "when" become "Where can I find information on this point?" The directing function which thus devolves upon the teacher becomes one of his most important functions, and in certain circumstances he becomes a work of reference for the development of a line of theoretical thinking which illumines the "practical" work already done, or the provider of a kind of skeleton framework around, or in, which the results obtained may be fitted. He frequently provides the opportunity for the discussion of points of apparent or real disagreement, or provides the all-embodying name or phrase which clinches the idea and serves as a label for reference on future occasions to what has been a complex investigation. For example, several exercises are set to develop an appreciation of the facts with regard to the abnormal winter temperature of the north-east Atlantic Ocean. Other lessons develop the consequences thereof. These exercises and their results become the subject-matter of a discussion by the class as a whole, or by individuals, and in this discussion a phrase like "The Winter Gulf of Warmth" comes as a label to a set of connected ideas; it clinches the matter. So with all important names and phrases; they are provided by the child or teacher as a result of discussion.

At first the use of printed accounts of far-off lands will arise naturally out of exercises on the interpretation of maps; *e.g.*, the vegetation map shows a region of cold desert or tundra: the exercises in connection with this have familiarised the child with the reasons why such a region occurs as shown on the map, but there will arise the question as to what such a region looks like to the traveller, and hence the child refers to the records and descriptions made by travellers—at first to short, concise extracts, and later to the fuller accounts; in a similar way, the reading of the newspaper or the inspection of a photograph will almost compel the child to read first-hand accounts of the various lands in the world, and will in time create a demand for first-hand information on all matters.

This method of teaching geography by means of a series of graduated and arranged problems placed before the child for solution allows of the gradual withdrawal of the direct intervention of the teacher; the whole course confirms in the child certain habits of mind, a certain method of attack, with which to face any problem, so that in the long-run the child becomes independent of the teacher's guidance and also of the help of the geographical text-book of the ordinary type, because he feels competent to refer to the original authorities and to work out for himself an account of the geography of a district which shall compare not unfavourably with the accounts usually given in the ordinary text. A written text will only be of value to him when it embodies some new contribution to the subject-matter beyond what is usually available, or some new treatment of certain well-known facts which casts new light upon certain phases of the subject hitherto partially ignored.

A prime difficulty in the teaching of any subject is the linguistic difficulty: that of expressing in the terms of, and with the precision requisite to, the subject, the conclusions and ideas pertinent to the matter in hand. The method of teaching by practical exercises provides a continuous necessity for this kind of expression, and the maturing of the mental powers of the pupil is necessarily followed by the growth of the power of expression. The teacher will very rarely find it necessary to dictate the form in which the results should be stated: if a statement of results contains just conclusions from the data investigated, then he may criticise the form into which the statement is thrown, but on no account do more than suggest a better form of expression. Further, throughout the course there must be training in precision; the child is not allowed to make assumptions which are not legitimate deductions from the data considered; and if such assumptions be made, and they are worthy of the trouble, they should be at first labelled as assumptions, and then confirmed, if possible, by further investigation.

Such methods of teaching as are here propounded have an additional value in that they leave the pupil by habit in a position to carry on his investigations, and render him very liable to feel the constraint due to curiosity to find out more about certain matters which catch his attention, this constraint being probably the stronger because he feels that he knows how to proceed with an inquiry, and is not at a loss as to where he must seek the necessary data. In short, he has passed a probation in research, research graduated to his powers, which makes him feel master of himself and confident in his ability to secure valid results. Habits of industry, method, power, and some knowledge are his inalienable possessions.

MILTON AS SCHOOLMASTER.[1]

CHRIST'S COLLEGE has done well to honour the most illustrious of her sons with a special number of the *Magazine*, and the editors are to be congratulated on the contributors they have secured. Prof. Hales and Dr. Peile write on "Milton and his College"; Mr. Austin Dobson's Tercentenary verses and Prof. Mackail's speech at the Tercentenary dinner are included; Prof. Skeat and Mr. C. R. Fay are among the contributors.

[1] *Christ's College Magazine*, Milton Tercentenary No. 120 pp. (Cambridge University Press.) 2s. 6d.

Mr. Shipley's miniature portrait is reproduced as a frontispiece, and the pianoforte score of Henry Lawes' music, as used at the "Comus" performance, is given.

It is natural that in such a publication John Milton's strong dissatisfaction with the academic curriculum of his time should be kept in the background. But it is significant that both William Wordsworth and John Milton, widely differing in other respects, found the Cambridge curriculum irksome and distasteful. The incessant disputations, the "frivolous" themes by which alone academic distinction was achieved, proved galling to minds which would have busied themselves more fruitfully in a freer, self-chosen line of study. "Cambridge," says Milton in 1642, "which as in the time of better health and mine own younger judgment, I never greatly admired, so now much less . . ." The fact that the "Tractate on Education" omits all mention of the universities, and, by providing extended courses of learning up to the age of twenty-one, practically proposes to supersede them altogether, shows that Dr. Peile is not quite justified in saying "it does not appear how he could have spent his time much better."

Milton's "Tractate on Education" has not met with the careful study it deserves. To Mark Pattison "its interest is wholly biographical." He speaks of Milton as falling into the errors of "the inexperienced teacher." Milton was not an inexperienced teacher: he had been teaching for four years when he wrote; he knew education from the active, conative side as well as the passive. The "voluntary idea" which he expounded arose out of practical experience. It was not mere talk in the air, as Mark Pattison suggests. The fact is that John Milton's time as schoolmaster is a period at which his biographers are inclined to boggle, for which they feel called on to apologise. One of them suggests that he taught gratuitously, his sole motive being the promotion of learning and goodness; his snobbish nephew-biographer is careful to explain that Milton did not teach a parish school, but "the sons of some gentlemen that were his intimate friends." Even Johnson, who had himself been a schoolmaster, says, "Milton was not a man who could become mean by a mean employment." This was the most unkindest cut of all.

Whether teaching in those days was a "homely, slighted trade" or not, teachers may be proud to claim John Milton as one of their profession, and certainly education was no "mean employment" in his hands. Never has it been more nobly conceived than in his well-known definition: "I call a complete and generous education that which fits a man to perform justly, skilfully, and magnanimously all the offices, both public and private, of peace and war." Not only was his ideal of what education should be comprehensive, but he had an ideal of education on a national scale which it took more than 250 years for England to work out. In his "Ready and Easy Way to establish a Free Commonwealth," in which he advocates setting up what we should call county councils, part of the duties of these councils is to establish schools: "They should have here also schools and academies at their own choice, wherein their children may be bred up in their own sight to all learning and noble education; not in grammar only, but in all liberal arts and exercises. This would soon spread much more knowledge and civility, yea, religion through all parts of the land."

Of Milton as a practical teacher we know but little, save that he planned out the time for his pupils with the same rigorous exactness as he did for himself. Probably his "Logic" and "Latin Grammar," perhaps also his "History of Britain" and "Treatise on Christian Doctrine," though published much later, are the product of his teaching days. We know also that, like all blind men, he was a keen judge of reading. He could tell at once, Thomas Elwood informs us, if one did not understand the sentence one was reading to him, and would "open up the dark passages."

But of Milton as an educational theorist we know much, and his short tractate has still value to-day over and above the historic interest which attaches to it. In education, as in politics and religion, he was a reformer. He has the faith which every effective teacher needs, faith in the perfectibility of man, and he finds the methods in vogue of attaining that perfection are slow and barren. The schools spend "seven or eight years in scraping together so much miserable Latin and Greek as might be learned otherwise easily and delightfully in one year." The universities are busied with the "ragged notions and tablements" of "scholastic grossness," and their net result is distaste for learning and an over-production of lawyers, grounded not on "the prudent and heavenly contemplation of justice and equity, which was never taught them, but on the promising and pleasing thoughts of litigious terms, fat contentions, and flowing fees."

From this "asinine feast of sow thistles and brambles" he turns to his idea of what education should be. Though his reference to Comenius in the introduction is depreciatory, the ideas of Milton for the betterment of the educative process are really derived from him through Samuel Hartlib, the many-sided Prussian merchant, to whom the tractate is addressed. His first care is to teach "distinct and clear pronunciation." "For we Englishmen, being far northerly, do not open our mouths in the cold air wide enough . . . but are observed by all other nations to speak exceeding close and inward." This sentence at once bespeaks the practical teacher.

His scheme of instruction is based on the classics. At that time no other basis was possible, but Milton was ahead of the other classicists of his day in seeing that there was no magic

virtue in the learning of a language in and for itself. Language is to be learned because it conveys to us things useful to be known with a beauty of form which wins us to love the things that are best. Milton's course of reading is severely practical; he believes in "things." We may smile at the idea of learning agriculture from Cato and Columella, or physical science from Pliny and Solinus; but, when it comes to moral knowledge, the literature that will "win them early to the love of virtue and true labour," Milton did well, and so de we, in turning to the heroic stories of Greece and Rome, and to unsphere the divine Plato.

But there is more in Milton than what Matthew Arnold playfully called "the grand old fortifying classical routine." He provides for mathematics and its practical application to surveying, fortification, architecture, "enginery," and navigation; for hygiene, "economies," politics, and logic. Practical men, from fishermen and fowlers to mariners and engineers, are to be called in as teachers. "In an odd hour"—and spare hours must have been spare enough in his school—his pupils may pick up Italian; Hebrew, Chaldee, and Syrian might be gained during the evening divinity hours. Dr. Garnett may well call it "a scheme for the education of Miltons," and Johnson remonstrate that, after all, "nobody can be taught faster than he can learn."

But the scheme is not all bookish. There is, as one would expect, a place for music. "The solemn and divine harmonies of music" are to "assist and cherish nature in her first concoction, and send their minds back to study in good time and satisfaction." There are to be wrestling, riding, and sword-play. Boys are to be taught all that belongs to soldiership, "embattling, marching, encamping, fortifying, besieging, and battering." They are to travel, and sometimes take sea "as far as to our navy," so as to learn something of sailing and sea-fighting.

Of course, there are obvious defects. Of girls there is no mention whatever. Money left at this period for the education of "children" was unhesitatingly devoted entirely to the foundation of schools for boys. "One tongue," said Milton, "is enough for a woman." But Milton's idea is, for all that, a great one. It is not to make scholars, admirable scholar as he was himself; it is to make men. The education that is to make men must be a religious education, training its pupils, above all things, "to know God aright, and out of that knowledge to love Him, to imitate Him, to be like Him." To this end all the instruments and methods of education are to conduce; the things of sense, the social and open-air activities, the music, the training of reason, the principles of statesmanship and law and logic, are all means to an end, and that end is nothing less than the measure of the stature of the perfect man, who not in any special faculty but in his totality is divine. Such is Milton's ideal; but, as he says at the end, "this is not a bow for every man to shoot in."

OXFORD AND WORKING-CLASS EDUCATION.

"I have caused thee to see it with thine eyes, but thou shalt not go over thither."—Deut. xxxiv. 4.

THIS important and very modern report[1] is the result of some hard thinking done by a few representatives of the working class in conjunction with a few of the teachers in Oxford who happen to agree with them. All are men; no woman is on the committee; perhaps, if a woman, learned or unlearned, had been there, the error which seems to permeate the report, and is at the root of the whole tentative suggestion, might have been avoided. Before we write another word, let us say that we are entirely in sympathy with the forwarding of the higher education of the working class.

But this report imagines that higher instruction and higher education are one and the same thing; it seems to think that lectures on economics or on Keats or on "Prometheus Unbound," delivered in a residential-university town, constitute residential-university education. Prof. Sadler, Mr. Graham Wallas, and others are quoted as being singularly useful in transmitting university education to Manchester and other places; but Prof. Sadler may give you all his knowledge, he may charm you with his style and his smile and his nice derangements of epitaphs, but he cannot give you what Oxford gave him. Said the gardener of the Magdalen turf, "We rolls it and we waters it—sixty years."

If this report really means a report on education, how is it that you cannot find in it any reference to morals or religion? To begin with, we believe an immensely important section of the working class demands, and justly demands, chances for higher instruction, for the highest instruction; though why this should be limited (as it is in this report) to political history and controversial economics, with a trifle of literature thrown in, we do not see. We believe that the next fifty years will see that demand justly gratified, in ways yet undreamed of; we believe that the community will benefit enormously by this forward step, if taken under the guidance of the sane, and following the patterns already woven for us by history; but we do not believe (and in this we agree with most working men) that now or at any time this important section of the working class has wanted Oxford, or that Oxford has wanted it.

It is customary to say in defence of such movements as this that genius belongs to no special class: that sculpture, painting, music, poetry, set their laurels on the brows of poor and rich alike. This is as true as it is false. Genius belongs to the class of geniuses; art to the class of artists; poetry to the class of poets. Find your artists and your poets, and the world (which never was

[1] Report of a Joint Committee of University and Working-Class Representatives on the Relation of the University to the Higher Education of Workpeople. (Clarendon Press.) 1s.

a snob) welcomes them with open arms. Oxford would welcome them too.

The residential-university, for that is what Oxford is, differs from London, which is laboriously trying to find some means of imitating it, in this, that it stamps its real sons ineffaceably. That is not peculiar to Oxford. Every public school has the secret, even in greater measure, with the result that the older universities could better be spared by the nation than the much-abused public schools.

If instruction only be required, that may be obtained best in London, where inquirers may attend classes conducted by admirable teachers in anything from Egyptology to Christian Science. If a combination of instruction and university education be required, then the plan to be pursued should be different *in toto*. We talk of an educational ladder; such a thing does not exist. We talk of colleges opening their doors to the poor; they do it not. A few men here and there, by their own force or with the help of charity, gain high university distinctions; probably not one in a hundred of them but carries with him always that of which he most desires to be rid. And who shall say how far apart henceforth he and his father live?

Now the true coping-stone of the primary school, the true top rungs of the educational ladder, are found only in one place—the poor man's residential university. Of course, we should not label it thus; but this would be its real name—a name of which it might but would not be proud. It should rise as Oxford and Cambridge rose, a college or two at a time; it should take statutes from all good codes and amend them, as Oxford and Cambridge did; it should be begun for the poorer classes and by the poorer classes (as, *pace* Dr. Rasdall, Paris and Montpellier, and Prague, and Oxford, and Glasgow were); it should attract learned teachers from all universities and cities, as Paris and Oxford did; it should frequently exchange students with all learned centres, as they did; it should set its face against indolence and luxury and vice, as other universities have not always done; it should send its sons back to a workaday world, their sympathies undimmed; not merely instructed, but educated by its spirit and by living in comradeship with real men of their own serious, hard-knit, vivid, impecunious origin. This is what the thinking working man wants, and this he could in a moment call into being if any trusted leader would care to show him the way. It is impossible to gauge the good effect which such a university would have on the older universities, on the country, and on the Empire at large.

The Children's England. By G. Rhys. xii+216 pp. (Cassell.) 1*s.* 6*d.*—Mrs. Ernest (Grace) Rhys takes her children round and through England, chatting pleasantly, first on a coasting voyage and then in the inland counties, describing the features of the country, natural and human, and interspersing the description with pictures and bits of history. A pleasant book for the children to read and for a teacher to read with younger classes.

A COMMENTARY ON CICERO'S LETTERS.[1]

WE have already noticed the first two volumes of this remarkable work, and our view is not altered by these volumes. The author still maintains the extraordinary interest of his picture. In the third volume he has a task even more difficult than in the first and second. It may be difficult to reconstruct in imagination the character of a Lucullus or a Caesar: it is even more difficult to make intelligible the intermixed intrigues that followed the murder of Caesar and the personages who took part in them. We have no hesitation in saying that a period that from our schooldays has seemed to be an unmitigated bore now bores no longer. As before, we add, with due modesty, that we do not suppose all scholars will agree in the author's description: he may be wrong; let the doctors decide. But we do feel that the doctors, however correct, have been too often dull, unreal, pedantic, whilst this man is the direct opposite. It is a strong confirmation, moreover, even of the scholastic side of the work, that we have found it a most illuminating commentary on Cicero's letters. And is not one of the historian's functions, perhaps his greatest, to make the past live, and to touch that human sympathy and comprehension which alone can transform facts into history?

In the ironic and cynical atmosphere of Signor Ferrero's book many great reputations dwindle; but we are heartily glad to see that the reputation of Cicero grows. Mommsen has, in our opinion, too long been an obsession on the history of Rome, as Dörpfeld has been on the archæology of Greece: Italy, which has so long been in the background where we might have expected her to be in front, has at last come to the front, and, as a consequence, Cicero once more becomes human. It is, in fact, hardly possible for a German to understand Cicero, who is closely akin to the Italian. With the German, all is materialism: he can see something of the greatness of Caesar, because one side of that grand genius was materialistic; but Cicero, the simple heart and the complex intellect, the patriot and man of letters with whom personal advantage weighs nothing at all, the man of delicate honour but often uncertain judgment, is too far from the Prussian machine-made article to be properly appreciated. Ferrero has got nearer to the real Cicero, who, indeed, has always been more visible to us in England than to any German save Niebuhr.

We cannot, however, close our eyes to a few debatable points. Did Antony, then, make no speech over the body of Caesar? We never realised before how much Shakespeare has influenced our conception of the period until we read Ferrero, and found Antony without his speech.

[1] "The Greatness and Decline of Rome." By Guglielmo Ferrero. Translated by the Rev. H. J. Chaytor. iii. The Fall of an Aristocracy 342 pp. iv. Rome and Egypt. 292 pp. (Heinemann.) 6*s.* each net.

We cannot forgive Ferrero for docking Antony of his speech. We hope he made that speech; we are sure he made it. Antony's uncertainty after the murder, his plans gradually forming and gradually carried out, his strangely mixed character and strange career, are sketched with a masterly skill: we thank Ferrero for all this, but we want our speech. We shall still feel that the poet has in this instance seen clearer than the historian. We have also a minor complaint in the journalistic use of different names for the same person. Why is Octavian now Octavian, now Caesar's nephew, and now Caesar's son? The translator is probably not responsible for this trick, as he is for the incorrect translation of "unique" for *unico* (sole), p. 260.

In the fourth volume, it is Octavian who absorbs attention, and again Ferrero depicts a wholly new character. This is not the astute diplomatist of our acquaintance, using all the forms of the constitution and all human weakness to further his ambition. A weak, vacillating, incapable man emerges into view: a recluse, a student, who wants above all to live a quiet life if only circumstances will let him: who runs away from battle, and leaves his fleets and armies to look after themselves: who wins the battle of Actium by a fluke, to his own astonishment: who leaves Rome to avoid the flattery and the responsibilities that are showered upon him. Ferrero's cynicism becomes more evident than ever. "If the battle of Actium had not been fought to save the power of Rome, it had, at any rate, saved the little Sabine estate of Horace." "Once again had Italy crushed its old nobility, and had then humbly begged the defeated party to govern the empire." "Augustus was past master in that supreme political art, which consists in exaggerating difficulties in order to secure corresponding credit when they have been surmounted." We cannot help thinking that Ferrero writes with one eye on Rome and one on modern Italy; indeed, we have frequently shivered in our perusal at the sight of the same disintegrating influences that are too familiar to us in England—softness, cowardice, luxury, and insubordination. As for poor Augustus, his very ailments are undignified: he is afflicted with indigestion and writer's cramp.

Lastly, we would direct attention to the skilful way in which the literary works of the age are placed. Each seems to come out in its place by a sort of inevitable necessity. Cicero's ideas live after him, and Augustus works out the principles of Cicero's Republic; Livy, Virgil, and Horace appear with their works in the proper atmosphere. Of the historians, tribute is often paid to Suetonius, whose importance certainly grows under Ferrero's hands.

Once more we congratulate the world of scholars on the appearance of a historian of the old type, the human type, not the Byzantine; and we hope his example may lead a reaction against the modern dryasdusts.

RECENT BIBLICAL CRITICISM.[1]

IT is undoubtedly time for a new Bible dictionary. The discoveries of the spade alone have revolutionised Biblical study in less than a generation, and the literary or historical critic has wholly altered our views of the structure of the Biblical corpus. This dictionary includes Biblical names and things, and is believed to be complete as to persons; it also contains articles on the ideas and doctrines of the Bible. It is illustrated by thirty-six full-page plates and a number of cuts in the text. The list of contributors contains a large number of well-known names, including some of first-rate eminence, such as Prof. Sanday and Sir Charles Warren; the general impression given by them is of a safe conservatism, the extremists on either side being absent. At the same time, there is a certain amount of inconsistency in the points of view of the contributors, some being ready to go much further than others, and we should have been glad to see more authorities on Biblical antiquities. Very few of the contributors are laymen.

In the matter of antiquities there is little scope for controversy, or at least controversy is not likely to arouse strong feelings. But it might have been desirable for all this class to get archæologists to write instead of theologians. For example, the article on Ephesus is not signed, and it does not appear to take account of all discoveries of late years. The temple, which was a mile or so outside the city, not "at the head of the harbour," but inland, has been thoroughly excavated by Mr. Hogarth, and much of the city laid bare down to the old quay (now some miles from the sea). Its plan is given from Guhl. The upper view on Plate XIII., labelled "Ephesus," is the stage of the theatre. On the other hand, the article "Gezer" is quite up to date. That on Writing is very full and useful. "Paul" is a good example of a laborious statement of classified facts, with the chief doctrines set forth by the apostle; his statesmanship and the great comprehensiveness of his plans are perhaps not so well set forth. Looking at the result with knowledge it is hard to realise what the intellectual and moral force must have been to conceive such plans and to carry them out. Nor, again, is it so clearly explained how much of Christian doctrine is due solely to Paul. The Fourth Gospel is assigned to St. John without hesitation; Daniel is, in part at least, the work of its reputed author. The view of inspiration taken in the article on Holy Scripture is in accordance with modern views, and will probably be in advance of most of those who will use the book. On the whole, the book will satisfy most Christians and will have their confidence.

It is a pity, we must add, that it is printed on heavy paper. With better paper it might have been half as thick and a quarter the weight; in its present binding it will not stand much handling.

[1] "Murray's Illustrated Bible Dictionary." xvi+972 pp. 21s. net.

THE MOST NOTABLE SCHOOL BOOKS OF 1908.

The short lists of recent school books which it has been customary to publish in the first number of new volumes of The School World have proved of such assistance to teachers anxious to adopt the best available text-books in their classes, that we are encouraged to continue the practice. The compilation of the following lists of books published during 1908, or too late in 1907 for inclusion in the lists prepared for our issue of last January, has been entrusted to experienced teachers familiar with the needs of schools. The compilers have had a free hand, and attention has not been confined to books reviewed in these columns.

Where the character of the volumes is not indicated sufficiently by the titles, a few explanatory notes have been added.

Modern Languages.

"Pascal, La Rochefoucauld, Vauvenargues." Edited by A. T. Baker. (Macmillan.) 2s.

V. Hugo, "La Légende des Siècles." Edited by G. F. Bridge. (Clarendon Press.) 3s.

Two exceptionally well edited books.

E. Rigal, "Molière." (Hachette.) 2 vols. 3s. each.

A very able study of the writer and his works.

L. Chouville, "Trois Semaines en France." Edited by D. L. Savory. Exercises by Miss F. M. S. Batchelor. (Clarendon Press.) 2s.

R. H. Pardoe, "The Transitional French Reader." (Rivingtons.) 3s.

Two thoroughly good books on reform lines.

S. A. Richards, "A Phonetic French Reader." (Dent.) 1s. 4d.

Passages in verse and prose, well selected, and printed in the ordinary spelling and in phonetic transcript.

O. Siepmann, "A Short French Grammar." (Macmillan.) 2s. 6d.

Suggestive and businesslike.

Gabriel Hanotaux, "Contemporary France." Vol. iv. (1877–1900). (Constable.) 15s. net.

J. H. Harbottle and P. H. Dalbiac, "Dictionary of French Quotations." (Sonnenschein.) 3s. 6d. net.

F. Avenarius, "Balladenbuch." (München: Callwey.) 3s.

A splendid book of ballads, with some fine illustrations.

"Was die Zeiten reiften." (Leipzig: Voigtländer.) 2s.

Eine Anthologie deutscher Gedichte aus acht Jahrhunderten.

F. Paulsen, "German Education Past and Present." Translated by Th. Lorentz. (Unwin.) 5s. net.

William H. Dawson, "The Evolution of Modern Germany." (Unwin.) 24s. net.

M. V. O'Shea, "Linguistic Development and Education." (Macmillan.) 5s. net.

Although this book deals mainly with linguistic development in the mother tongue, no modern language teacher can read it without much profit.

Classics.

Very few school books of the year have special claim to notice.

"A Latin Reading Book: Gotham and other Stories." By E. D. Stone. (Macmillan.) 1s. 6d.

This is full of entertaining matter, mostly original.

"A Latin Reader (Verse and Prose)." By W. K. Gillies and H. J. Anderson. (Bell.) 2s.

Contains many unhackneyed pieces.

"The New Latin Delectus." By W. J. Thomas and E. P. Doughty. (Marshall.) 1s. 6d.

Pieces from Livy (simplified), Horace, and Ovid. The notes are few but excellent.

"Altera Colloquia Latina." By G. M. Edwards. (Cambridge University Press.) 1s. 6d.

More easy dialogues from Erasmus.

The above four books are for beginners.

"Selections from Erasmus, chiefly from his Letters." By P. S. Allen. With portraits. (Clarendon Press.) 2s.

An admirable book for older pupils.

"Mundus Alter et Idem." By Joseph Hall. Edited for school use by H. J. Anderson. (Bell.) 2s.

A brilliant satire, not easy, but suited for a sixth form.

"Basis Latina." By E. V. Arnold, assisted by W. Rippmann. Introduction—Syllabus—Grammar Notes—Vocabulary—Index. (Dent.) 1s. 6d.

The first systematic attempt to make a groundwork which shall contain all that is necessary, and no more, in grammar and vocabulary.

"Vocabulary of High School Latin." By Gonzalez Lodge. (Columbia University, N.Y.) 1.50 dollars.

The vocabulary of certain parts of Caesar, Cicero, and Virgil, with 2,000 commonest words marked by thick type, and statistics of use for all. A teacher's book.

"A Guide to the Exhibition illustrating Greek and Roman Life." (British Museum.) 1s. 6d.

An excellent handbook of the antiquities of common life.

"Menander: Quattuor Fabularum Fragmenta." Leiden.

With this book, for the first time the reader can form some opinion of Menander's powers.

"Oxyrhynchus Papyri V.: with new poems of Pindar and parts of a new historian."

"Herodotus, VII.–IX." By R. W. Macan. 3 vols. (Macmillan.) 30s. net.

Full of learning.

English Language, Grammar, and Composition.

"Intermediate English Grammar." By A. J. Ashton. (Bell.) 2s.

A careful revision of Mason's "Outlines" and "Shorter Grammar," with additions.

"The King's English: Abridged for School Use." (Clarendon Press.) 1s. 6d.

An admirable abridgment. Nothing essential of the original omitted.

"The Sounds of English: an Introduction to Phonetics." By H. Sweet. (Clarendon Press.) 2s. 6d.

An excellent manual.

"The Teaching of Reading." By H. C. Wyld. (Murray.) 2s.

For training colleges. Skilfully planned on phonetic lines.

"The Teaching of English." By A. E. Roberts and A. Barter. (Blackie.) 2s. 6d. net.

A comprehensive book on all stages of English.

"The Writing of English." By P. J. Hartog. (Clarendon Press.) 2s. 6d.

A very inspiring book for teachers. Excellent in design and in execution.

"Essay and Letter Writing, with Models and Outlines." By F. H. Brooksbank. (Macmillan.) 2s. 6d.

Very useful for examinations.

"Handbook of Composition." By E. C. Woolley. (Heath.) 2s. 6d. net.

May be consulted with profit, but more for American than English schools.

"Junior English." By F. J. Rahtz. (Methuen.) 1s. 6d.

For lower forms of secondary schools. Leads up to the author's "Higher English."

"Indexing and Précis Writing." By G. B. Beak. (Macmillan.) 2s. 6d.

Method and examples very satisfactory.

History.

For the Use of Teachers.

"The Teaching of History." By Dr. O. Jäger. (Blackwell.) 3s. 6d. net.

"The Teaching of History in Girls' Schools in North and Central Germany." By Eva Dodge. (Manchester University Press.) 1s. 6d. net.

Both on history teaching in Germany.

"The Cambridge Modern History." Vol. v. The Age of Louis XIV. (Cambridge University Press.) 12s. 6d. net.

"The Constitutional History of England." By F. W. Maitland. (Cambridge University Press.) 12s. 6d.

An illuminating work by the late professor of English law.

"The Dawn of the Constitution." By J. H. Ramsay. (Swan Sonnenschein.) 12s.

The reigns of Henry III. and Edward I.

For the School Library.

"The House of Commons: its Place in National History." By J. H. B. Masterman. (Murray.) 1s. 6d.

"The Development of Modern Europe." Two vols. By J. H. Robinson and C. H. Brand. (Ginn.) 6s. 6d. each.

Mainly on the eighteenth and nineteenth centuries.

"Time Table of Modern History, 400–1870." By M. Morison. (Constable.) 8s. 6d. net.

The events of European history in columns.

"Atlas of European History." By E. W. Dow. (Bell.) 6s.

"The Letters of Queen Victoria." Three vols. Edited by A. C. Benson and Viscount Esher. (Murray.) 6s. net.

"The Galleon of Torbay." By E. E. Speight. (Chatto and Windus.) 6s.

A quite unusual "romance."

Source Books.

"English History Illustrated from Original Sources." 1485–1603. By N. L. Frazer. 1603–1660. By F. J. Weaver. (Black.) 2s. 6d. each.

"Illustrative History: Hanoverian Period." By J. W. B. Adams. (Marshall.) 2s. 6d.

"Readings in English History from Original Sources." 1480–1688. By R. B. Morgan and E. J. Bailey. (Blackie.) 2s. 6d.

"An Elementary Source Book." (Pitman.) 3s. 6d.

"A Book of Poetry (Tudors and Stuarts)." By G. Dowse. (Macmillan.) 9d.

Text-books and Readers.

"A History of Scotland for Schools." Part II. By P. H. Brown. (Oliver and Boyd.) 1s. 6d.

The two parts can also be had in one volume.

"The Renaissance and the Reformation." By E. M. Tanner. (Clarendon Press.) 3s. 6d.

European history, 1494–1610.

"A School History of Berkshire." By E. A. G. Lamborn. "A School History of Oxfordshire." By H. A. Liddell. (Clarendon Press.) 1s. 6d. net each.

"Dramatic Scenes from History." By F. Johnson. (Arnold.) 1s. 6d.

Dramatic adaptations from original sources.

Geography.

General.

"School Text-book of Geography." By L. W. Lyde. (Black.) 3s. 6d.

Strong on cause and effect and the *human* note.

"Text-book of Geography." By G. C. Fry. (Clive.) 4s. 6d.

A "cram" book for the London matriculation.

"A Rational Geography." By Ernest Young. (Philip.) Three parts. 1s. 6d. each.

Specially designed to meet the requirements of the Board of Education's suggestions for secondary schools.

"A First Geography." By C. A. E. Rodgers. (Blackie.) 1s.

Good for young children under competent oral instruction.

"Geography—Structural, Physical, and Comparative." By J. W. Gregory. (Blackie.) 6s.

Written particularly from the geological point of view.

"The London Geography." By Keith Johnston and A. H. Keane. (Stanford.) 12s.

Revision of a well-known text-book of physical, historical, political, and descriptive geography.

"Applied Geography." By J. Scott Keltie. (Philip.) 2s. 6d.

A second edition, and an excellent work for the highest forms.

"The International Geography." By H. R. Mill, &c. (Macmillan.) 15s.

In addition to the single volume, this indispensable work is now issued in nine separate parts, each at from 1s. to 2s. 6d., with the addition of examination questions.

"Practical Geography." By J. E. Unstead. (Clarendon Press.) 1s. 6d.

More than 400 exercises on maps and plans, the home district, weather, and the British Isles.

Special.

"Scientific Geography. Book II. British Isles." By Ellis Heaton. (Ralph, Holland.) 1s. 6d.

Adapted for certain examinations, and written largely on the causal method.

"Lands Beyond the Channel." By H. J. Mackinder. (Philip.) 1s. 9d.

The second of an excellent series, and the high-water mark of a geographical reader.

"Regional Geography—Asia." By J. B. Reynolds. (Black.) 2s.

Well got up, with good illustrations and exercises.

"Practical Exercises in Physical Geography, with Atlas." By W. M. Davis. (Ginn.) 3s. 6d.

A collection of thought-compelling exercises; will probably be voted very "dry" by students.

"Climate." By R. de C. Ward. (Murray.) 6s.

Special point—the relation of climate to man.

"Historical Geography on a Regional Basis." Vol. i., "British Isles"; vol. ii., "Europe." By E. W. Dann. (Dent.) 2s. 6d. each volume.

Emphasising the necessity of taking history and geography together.

"Handbook of Commercial Geography." By G. G. Chisholm. (Longmans.) 15s.

This is the *seventh* edition; *verb. sap.*

Atlases, Wall Maps, &c.

"The Class-room Atlas." By E. F. Elton. (W. and A. K. Johnston.) 5*s.*

The third edition, revised; good and up-to-date.

"The A.L. Pupil's Atlas." (Leeds: Arnold.) 1*s.* 3*d.*

Compiled on a highly coloured, but withal effective, physical basis.

"New Orographical Wall Maps—S. America and Australasia." Under direction of H. J. Mackinder. (Stanford.) 20*s.* each.

Deepening tints of brown; excellent.

"Orographical Wall Map—Europe." By B. B. Dickinson and A. W. Andrews. (Macmillan.) 15*s.*

Very clear and much to be recommended; accompanying book of "Notes" (1*s.*) is really a brief but good general geography of Europe.

"Geographical Pictures—Alpine Series." By L. E. Walker and H. J. Snape. (Black.) Three packets. 6*d.* each.

Illustrative pictures, suggestive questions, descriptive letterpress.

Mathematics.

"Modern Arithmetic." By H. Sydney Jones. (Macmillan.) 4*s.* 6*d.*

The rest of the title, "with Graphic and Practical Exercises," indicates the main feature of this excellent book.

"A School Arithmetic." By H. S. Hall and F. H. Stevens. (Macmillan.) 4*s.* 6*d.*; without Answers, 3*s.* 6*d.*

A good book, on modern lines.

"Elementary Algebra." By C. H. French and G. Osborn. (Cambridge University Press.) 4*s.* 6*d.*

The main feature of this book is the simplicity of the language used in the earlier chapters.

"A New Algebra." By S. Barnard and J. M. Child. (Macmillan.) 2*s.* 6*d.*

An interesting attempt to make the beginner understand the fundamental laws (commutative, associative, &c.). Negative numbers are not introduced until Part II., p. 149.

"Algebra for Secondary Schools." By C. Davison. (Cambridge University Press.) 6*s.*

Covers the subject from the beginning to convergence and the binomial, exponential, and logarithmic series. The treatment is more full than is usual, and the book will probably be found more suitable to upper forms than to lower ones. This book will also be published in two parts.

"Exercises in Algebra." By R. Nettell and H. G. W. Hughes-Games. (Longmans.) Without Answers, 4*s.* 6*d.*; with Answers, 5*s.* 6*d.*

A good collection of exercises.

"Intermediate Geometry." By A. Leighton. (Blackie.) 1*s.* 6*d.*

Proofs of theorems are prefaced by carefully arranged "investigation exercises."

"An Introduction to Practical Mathematics." By F. M. Saxelby. (Longmans.) 2*s.* 6*d.*

The explanations are clear, and the examples well varied.

"Elementary Mensuration." By W. M. Baker and A. A. Bourne. (Bell.) 1*s.* 6*d.*

Up to cone and sphere: should prove useful.

"Examples in Elementary Mechanics." By W. J. Dobbs. (Methuen.) 5*s.*

Includes both statics and kinetics. The great feature of the book is the large number of practical examples for which only simple apparatus is required. Some explanation is given, and the examples are arranged so that little further explanation is required.

"Modern Geometry." By C. Godfrey and A. Siddons. (Cambridge University Press.) 4*s.* 6*d.*

A sequel to their "School Geometry"; much easier than most books on the subject.

The two following books are of great interest to teachers or mathematical specialists in schools, and might occasionally be found useful for some of the best boys:

"A Course of Pure Mathematics." By G. H. Hardy. (Cambridge University Press.) 12*s.* net.

Contains an account of the different kinds of "number" and "function."

"The Analytical Geometry of the Conic Sections." By the Rev. E. H. Askwith. (Black.) 7*s.* 6*d.* net.

The bookwork of the subject is discussed more thoroughly than in any other modern English text-book.

Chemistry and Physics.

For Class Use.

CHEMISTRY.

"Introduction to General Inorganic Chemistry." By Alexander Smith. (Bell.) 7*s.* 6*d.*

"A Laboratory Outline of General Chemistry." By Alex. Smith and W. J. Hale. (Bell.) 2*s.* 6*d.*

"Notes on Elementary Chemistry." Pupils' edition. By J. B. Russell. (Murray.) 2*s.* 6*d.*

"Notes on the Teaching of Elementary Chemistry." Companion volume to the above. By J. B. Russell. (Murray.) 2*s.* 6*d.*

"The Arithmetic of Chemistry." By John Waddell. New impression. (Macmillan.) 4*s.* net.

"An Introductory Course of Chemistry." By H. W. Bausor. (Clive.) 2*s.* 6*d.*

"Elementary Science for Certificate Examination: Introductory Section." By William Briggs. (Clive.) 2*s.* 6*d.*

PHYSICS.

"First Year Physics." By Charles E. Jackson. (Methuen.) 1*s.* 6*d.*

"A Three Years' Course in Practical Physics." In three parts. By James Sinclair. (Bell.) 1*s.* 6*d.* each part.

"Practical Physics." By W. S. Franklin, C. M. Crawford, and Barry MacNutt. Vol. iii. "Photometry, Light, and Sound." (Macmillan.) 4*s.* net.

"Magnetism and Electricity and the Principles of Electrical Measurement." By S. S. Richardson. (Blackie.) 5*s.* net.

"Electrical Laboratory Course for Junior Students." By R. D. Archibald and Robert Rankin. (Blackie.) 1*s.* 6*d.* net.

"Elementary Science for the Certificate Examination. Section B. Physics." By J. Satterley. (Clive.) 3*s.* net.

"The New Matriculation Heat." By R. Wallace Stewart. (Clive.) 2*s.* 6*d.*

"The New Matriculation Light." By R. Wallace Stewart (Clive.) 2*s.* 6*d.*

"The New Matriculation Sound." By R. Wallace Stewart. (Clive.) 2*s.* 6*d.*

For the Use of Teachers.

"A Treatise on Chemistry." By Sir H. E. Roscoe and C. Schorlemmer. Vol. ii. "The Metals." New edition, revised by Sir H. E. Roscoe and Dr. A. Harden. (Macmillan.) 30*s.* net.

"A Text-book of Sound." By Dr. Edwin H. Barton. (Macmillan.) 10*s.* net.

"The Scientific Foundations of Analytical Chemistry treated in an Elementary Manner." Third English edition. By Wilhelm Ostwald. Translated by George McGowan. (Macmillan.) 6*s*. net.

"The Principles of Inorganic Chemistry." By Wilhelm Ostwald. Translated by Alex. Findlay. Third edition. (Macmillan.) 18*s*. net.

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HISTORY IN THE SCHOOL CURRICULUM.[1]

By Miss A. M. STEPHENSON, M.A.
Headmistress of the High School, Preston.

FIRST of all, what is history? May I quote from Bolingbroke? "I have read, somewhere or other—in Dionysius of Halicarnassus, I think—that history is philosophy teaching by example."

Let us, further, clear the ground by asking and answering a few questions. Should history have *any* place in the school curriculum, and, if so, *what* place? One frequently hears it argued that history is not a school subject; in fact, this belief is common ground to two sets of people holding quite different opinions. One set, inclined to underestimate the importance of the subject generally, says: "It may be desirable to be acquainted with the leading facts of history, but they can be easily acquired by reading a few text-books after schooldays are over; the comparatively short time during which boys and girls are under tuition is better devoted to other more important subjects in which the help and guidance of the trained teacher is indispensable."

The other set of people, holding, I venture to think, a somewhat distorted view of the subject itself, arrives at the same conclusion, viz., that history should be expunged from the school curriculum, but by a totally different line of argument. These people urge that "history is past politics," and that politics is for the mature mind, that history cannot be properly studied by such as have had no experience, or but little experience, of life.

With both these theories I thoroughly disagree. To my mind, history should undoubtedly have a place, and a very important place, in the school curriculum. It is not of such slight importance, nor so easy of comprehension, that it may be left to be picked up at haphazard, as leisure and inclination permit; nor, on the other hand, is it all so intricate and involved, so teeming with abstruse problems, so far removed from matters within the child's ken, as to be unsuitable food for the child-mind. Certainly "history is past politics" *and* a great deal more. To quote the late Lord Acton: "Politics and history are interwoven, but are not commensurate. Ours is a domain that reaches further than affairs of State." It includes, Arnold says, "What men thought, what they hated, and what they loved." Then surely history is suited to the child-mind. I mean, history sensibly taught; that part of history which is "dramatic, heroic, and humane" brought into prominence.

But, it may be argued, "that it is *not* unsuited to the child-mind" might with equal truth be said of many other subjects; that is a poor, negative sort of proof to urge. Have you no stronger arguments to adduce? Assuredly, yes.

[1] Abridged from an address to a meeting of teachers and others in Preston.

The subject may be regarded under three aspects: (*a*) The essential value of historical knowledge for and in itself, *i.e.*, the practical, utilitarian use; (*b*) the training of the mind it affords, *i.e.*, the intellectual use; and (*c*) for its influence on the morals, *i.e.*, its ethical use.

THE PRACTICAL VALUE OF HISTORICAL KNOWLEDGE.—Few people will deny it. From our own limited experience we shall, each of us, be ready to admit that knowledge of the past helps to an intelligent solution of the problems of the present and to a more or less correct apprehension of the future. It, more than any other study, helps us to understand our own national character. It writes for us, if we have the sense and the understanding to read them aright, lessons of advice, lessons of warning; it teaches us, for example, that persistence, on the part of the governing body, in a certain course of action in defiance of the clearly expressed will of the governed, will sooner or later produce dire results; it teaches us, again, that important economic changes, no matter how desirable the benefits they will confer on the great majority, will inevitably, at first, entail untold, undeserved, and probably quite incomprehensible suffering on the minority. It forces us to realise that in this world of ours there exist types of character, race, and nationality very different from our own, but not necessarily inferior to it; that other peoples exist with great pasts behind them, some with great futures before them, peoples with whom we have to reckon; from whom, if we will, we may learn much.

THE TRAINING OF THE MIND.—But I am not anxious to labour or to overestimate this practical, almost utilitarian, side of the study of history. For us, who are considering the subject from the point of view of the school, my second advantage, viz., the training of the mind which leads thereto, is even more important. I would go so far as to say that the educational function of history is primarily intellectual. History stimulates interest in the larger views of life, and it has this merit (not shared by all other subjects in our curriculum), that the applications of its lessons are always ready to hand, for its subject-matter is human life and motive.

Now, I take it, history has to do with four special sides of our intellect: imagination, reasoning power, memory, and judgment.

Imagination.—History exercises and stimulates the imagination. This is why the early stories of the Bible have made such an indelible impression on us; they appealed to, and satisfied, our imagination. So, as Mr. Woodward says, "History *begins* by being, and ought always *on certain sides* of it to be, an exercise of constructive imagination." In teaching small children, we must make them realise, as in a picture, the subject-matter of the lesson. It is useless to teach them *about* Alfred the Great or *about* the Spanish Armada. We must enable them to reconstruct the England of the ninth century, with its undrained marshes, impenetrable forests, and lack of unity, face to face with the fearlessness, the cruelty, the compelling persistence of the Norse invaders. Then they will realise in some small measure, it may be, but never to forget, why we call Alfred the Great, why we honour him as our first "Empire-builder."

In this connection, for the older children, I would put in a special plea for historical novels, especially those of Sir Walter Scott, Conan Doyle, Stanley Weyman, Baroness Orczy, and many others. These writers may have to plead guilty to the charge of making slight deviations from strict accuracy, but I have no hesitation in saying that that is a small price to pay for the vivid realisation of the times, of the manners and customs, of the "atmosphere," as it were, of the times of which they write. Similarly, at a later stage, pupils must realise the country and its social conditions, they must be able to project themselves back into the past, and to look at life through other eyes than their own. In school, what the teacher needs to do is not to impart a certain amount of knowledge (I quote from Mr. Woodward, to whose valuable essay I am deeply indebted for this part of my paper), "but to inspire a taste and to train the necessary intellectual faculty for further acquisition, to stimulate interest in the historic past, and to develop a power of seeing its incidents in clear-cut mental pictures."

Reasoning Power and Memory.—But history also develops the reasoning powers by training children to weigh conflicting probabilities, and by teaching them to reflect on cause and effect. Here I would urge the paramount importance of careful teaching. We teachers must realise that it is our business to help the children to a *rational* association of ideas, rather than an arbitrary one. I mean, for example, that while the peculiar and leading characteristics of the Tudor Sovereigns and their reigns may be learnt as so many isolated facts, it is far better that they should be pointed out to have been the natural and necessary outcome of causes at work through the previous centuries.

As there should be such a close connection between the reasoning power and the memory, I may be allowed to deal with them together. I believe that the old-fashioned verbatim memory is a thing of the past—that children cannot learn long passages by heart, or commit dates to memory, as readily as of yore. If this be so, we must find some substitute, and I hold that we have that substitute ready to hand in the keener perception and greater reasoning power of our children. This, surely, is a change for the better, a step forward. Yet I am sufficiently old-fashioned to insist on a certain amount of pure memory work, a skeleton framework to be mastered in early youth, certain accurate dates even to be fixed firmly; but I would also urge that it is our business to guide and train the children first of all to see and realise which are the facts *that matter*, the *significant* things, and then to know and remember them. It is of more value to reason out and *then* remember the causes which led up to, and the consequences which resulted from, the Wars of the Roses, than to be able to reel off correctly the battles with the winners, and even the dates. Moreover, probably the former will not be forgotten in six months; the latter will.

Do not forget to show the paramount importance of *character*, both national and individual; let the pupils think out the forces which have made for national decline, and those which have helped to build up empires.

Judgment.—In very close connection with my last point comes the next. History, besides training the imagination, reason, and memory, trains also the judgment, by which I mean "the faculty of estimating action—whether the action be that of an individual or of a body of men—as regards its wisdom and skill and its moral rightness." This quality is one which is constantly exercised in life, and it is cultivated pre-eminently by historical study. In life we criticise our neighbours, often quite unnecessarily; in historical study we criticise, necessarily, the aims which men and nations have put before themselves, the means they have adopted to fulfil those aims, and the extent to which they have succeeded or failed.

We should, of course, be careful not to impose our own judgments, but rather to lead the children first to view men and policies as *complete wholes*, to realise to the full

their difficulties, and then to form their own opinions on the skill and on the moral sincerity exhibited. I believe this special training to be particularly useful in this critical age, when children *are* critical. We older people know perfectly well that children now are, so to speak, born critical, that they simply do not and will not accept statements unquestioningly. We may deplore the fact, but we should be foolish to deny it. Is it not wise, then, to do all in our power to guard against uncompromising, hard, one-sided judgments?

THE ETHICAL USE.—I would go so far as to say that, next to the direct moral training given in the regular divinity lesson or in the moral instruction class, more can be done to inculcate great moral truths in the history class than in any other.

For example, take Henry II.; they have to realise the *man*, the man who, at twenty-one, had to face the task of reducing the most important part of western Europe to order—and it was chaotic enough at the moment. They have to realise his extraordinary virility, his restless activity, his utter unconventionality, his remarkable store of knowledge to which he was always adding from personal experience. Above all, they must realise the fact that Henry II. was cursed with a demon of a temper—the temper of his race; that at times it got utterly beyond his control, when he would fling himself on the floor and gnaw the rushes; and that he, king, nearly emperor though he was, had to pay the full price for his inability to control that temper. Have we not taught our moral lesson?

In these lessons, too, I claim that children may acquire a certain theoretical knowledge of, and interest in, human nature, which will stand them in good stead when they go out into life. When they leave school they ought—if we have done our work well—to know, as it were, personally, intimately, some of the world-builders, some of those men and women to whom we owe our very existence.

They should go out, too, broad-minded, trained, and ready to look out for the "other side" of every question. And in their hearts should be, already strong and well grown, the plant of patriotism which shall eventually bear the fruits of good citizenship.

It is we, surely, who should take care that that seed of patriotism has been well and truly planted and tended during the impressionable years of school life. Are we doing it? Do we teach them to look forward eagerly to the day when they shall be old enough, not to leave school and get out of leading strings so as to "do as we like and be our own master," but old enough to do something for their country, something, be it ever so little, to carry on her best traditions, something worthy of her historic past.

Now to consider ways and means.

THE TEACHER.—Give your history teaching to the *best* teacher on your staff. By that I would not necessarily urge that he must be a specialist, though that is, of course, desirable. But it is of supreme importance that this subject should be in right hands, just because the opportunities it affords are so many: the teacher must know which opportunities to seize, and when; he must be tactful and sympathetic. He must also be an enthusiast, for the subject, properly taught, does appeal to the large majority. His business is to make history live; otherwise it is better to leave it alone. "Make history interesting, indeed!" said Prof. Seeley. "I cannot make history more interesting than it is, except by falsifying it. And, therefore, when I meet a person who does not find history interesting, it does not occur to me to alter history; I try to alter *him*."

I spoke of history as training the child's imagination, but, of course, with young children this must entirely depend on whether the teacher *arouses* this imaginative faculty. The ordinary class text-book won't arouse it. The teacher must do it, and he won't do it by "hearing" a lesson; he must teach; he must be a born story-teller; he must make the most of every power he possesses: flexible voice, sympathetic, perhaps even dramatic, manner, vivid imagination; he must be able to adduce many and apt illustrations, and must have an instinctive knowledge of the child-mind, so as, in preparing a lesson, to be able to seize the matter which lends itself for treatment and reject the rest.

THE SCHEME AND THE WORK.—With regard to a suggested scheme, we English people are often accused of being too happy-go-lucky in our scheme of education. We are told that we have absolutely no method, that we leave everything to chance, and that it is by the merest luck if things turn out well. Very likely we ought to plead guilty to all these indictments and to many more, but in extenuation we may be allowed to direct attention to the fact that this very elasticity has advantages not to be despised. It is very often good to allow a master to work out his own scheme. As a nation we are keen to allow individuality; moreover, it is well to consider special local needs, and we know that one particular scheme of work may be excellent in itself, but absolutely unsuited to the requirements of a special school. I may be allowed, perhaps, to sketch the one which I advocate.

Kindergarten under Eight.—Tell stories of *world* interest and of peoples, choosing very carefully those whose deeds can be painted in vivid, glowing colours. Reconstruct the world of long ago; it invariably appeals to the young. Use the children's fingers. Let them model weapons in clay, build huts, dress dolls as ancient Britons. Show them pictures. Use blackboard illustrations freely and a magic lantern.

Forms I. and II., Eight to Ten or Eleven.—Still tell stories, but specially English. Begin to use a text-book. In Form II. begin to trace the sequence of events and to look for cause and effect. Encourage hero-worship, whilst clearly acknowledging faults. Point out difficulties overcome, victories won, wrongs ended by these great men. Use pictures, the lantern, and charades. Let the children tell you stories, and, for homework, illustrate with pencil and paints.

Forms III. and IV., Eleven to Fifteen or so.—Give two years to English history, either going right through twice, or half through each year, and two years to foreign history. Here the children *must* get a connected view; they must see English history as a whole. Perhaps this plan may result in a certain loss as regards accuracy in detail, but surely the gain will more than outweigh the loss. Consider the alternative plan which still holds in many schools, where we are tied and bound with the shackles of examinations and their syllabuses. It frequently happens that a child studies one special period several times over, but by some mischance leaves school knowing not one word of other periods equally important. But, worse than this, this more minute study of a comparatively short period—and by this "period" system the study must be minute and detailed—is totally unsuited to the immature mind of children under fifteen or sixteen. It probably involves the memorising of either comparatively unimportant or indigestible facts. For example, one of the alternatives set in one examination in 1908 for children under the age of sixteen was English history, 1399–1603, with special knowledge, mark you, of the Re-

formation movement. That is what I mean by requiring children to memorise indigestible facts. Here, I know, we have to face the examination fiend—which, I fancy, is more all-pervading in the secondary than in the primary schools—because, for one thing, I am pleading for such general treatment of the subject as can with difficulty be tested by the examiner. Then let us abolish the outside examination for children under sixteen. The value of the certificate is nil, and worse when it gives its owner a false idea of his own knowledge—or ignorance—and let us all, teachers and children alike, be subjected to thorough inspection on our own syllabus, and stand or fall thereby.

During these years much solid work must be done by question and answer, written and oral, much testing of careful, accurate learning, but we may vary it with requiring original illustrations, by impromptu debates, in which the speakers must speak for or against the motion as they are told, not as they feel inclined—to encourage them to see the other side. Now and again set them to write an imaginary conversation—say, between Lord Charles Beresford and Sir Francis Drake, or between Oliver Cromwell and Simon de Montfort; it is remarkable, sometimes, how they manage to reproduce the language of the day. Encourage visits to places of interest, and here forge a link between history and architecture. Surely the buildings—cathedrals, churches, walls, and forts—are speaking witnesses of the spirit of the age in which they were built. If you have been able once to point out the striking characteristics of Norman architecture, the low, round arches, the enormous thickness of the piers and columns, the sternness and austerity of the decorations, your children will *feel* that these Norman builders of ours in some sense resembled the builders of Egypt and of Rome, that they meant to build for eternity, to stamp on every stone the Norman pride in Norman strength. We have not, of course, many ruins of early work within reach, but in default of them I have found no difficulty in making really representative collections of postcards showing the style of different periods.

For foreign history "There seems no sufficient reason why English schools should not include in their curriculum, as German schools do, some outline at least of the past history of Europe and the great conceptions of the Middle Ages." In these forms the great difficulty is what to omit, how to keep everything in its true perspective. Perhaps local history may with advantage be introduced, but with very great care, lest the child's conception of the true value of things be tampered with seriously. It is so easy to overestimate the importance of the part played by our native town and our own forefathers in moulding the destinies of our country.

Forms V. and VI., Sixteen to Eighteen or Nineteen.—Specialise; study with considerable minuteness. Touch on constitutional history and on contemporary foreign history. Give larger books, to be read, at least in part, and some original documents. Continue to cultivate the memory, but more especially the reason and power of thought. Suggest the various ideals which men and nations set before themselves at different periods.

In general, teach the pupils to take notes properly, and to make good, clear maps. Test by *viva voce* questions to save time and make the children smart. Give such written homework as shall require *thought*. Set questions which cannot be answered out of a book, but which at the same time stimulate. Emphasise the human interest and the reality of the subject; otherwise one may find that at the back of their minds the children think these historical people were puppets, certainly not real flesh and blood like ourselves.

I would train them, too, to take broad, comprehensive views of great men and great movements. Let them pause, now and again, to take a general survey of the whole range of English history, so as to preserve their sense of proportion and to trace the gradual, steady march onwards. They must be sure to link up, in their own minds, the past with the present, and so to realise the continuity and oneness of it all, that it is all part of one great scheme, in which each one of them, too, has his share, absolutely essential to the ultimate perfection of the whole.

We should do well to beware of emphasising division by reigns; it is often very misleading, and generally appeals to the children in the same way as a formula!

We should forge as many links as may be between this subject and others, until we force the children to realise that no subject "liveth to itself," but that all react and interact upon one another, that watertight compartments are not to be tolerated for one moment, but that all are connected together by a perfect network of links.

Finally, let us never forget that our main object is not to stuff the child's memory with so many events, lists of battles, unimportant facts in the lives even of great men, but rather to quicken the interest, to stir the imagination, and to create a great love. We have for our subject-matter what must surely be to almost all of us—grown-up and children alike—the subject of most absorbing, of most intense interest, for it is the history of human lives, and it is true; further, that here, if anywhere, we can point out to the rising generation finger-posts which will tell them of some at least of the unsafe roads, some of the pitfalls and the bogs. For history *does* repeat itself; *e.g.*, when a nation begins to worship luxury and ease and wealth, when she ceases to lead the strenuous life, then, no matter how vast her power appears to be, her death-knell has sounded. It was so in the past; it will assuredly be so in the future. Surely it is worth any effort on our part that the children should leave our schools knowing such fundamental, such all-important bed-rock truths as these.

Having, then, the lives of all the world's greatest and noblest men and women for subject-matter, it must be our fault if those lives do not literally speak to our children and inspire them with such an admiration of and love for the good, the true, the beautiful, and the noble as shall become a motive power for life.

HOURS OF SLEEP AMONG CHILDREN IN ENGLISH ELEMENTARY SCHOOLS.[1]

By Miss ALICE RAVENHILL, F.R.San.I.

NEARLY three years have elapsed since I began to collect information upon the hours of sleep prevalent among children in our English elementary schools. The printed form I issued was designed to secure accuracy and to ensure that each return should conform to a similar plan. Information was asked as to age, sex, school attended, homework done, number of rooms (but, unfortunately, not the number in family) and general health, as well as for particulars as to the hours devoted to sleep in summer and in winter, or rather, as to the hours of rising and retiring at these seasons. Of the 10,000 forms I sent out, 8,650 were returned to me; but of these one-fourth were vitiated for various reasons, so that the facts are

[1] From a lecture delivered before the London Child Study Society; the lecture is to be published in full in the January issue of *Child Study*.

based upon the analysis of returns from 6,180 children between the ages of three and thirteen inclusive, of whom 3,500 are boys and 2,680 are girls. Table I. enables comparison to be made between the standard hours of sleep defined as necessary by our best authorities on the subject, and the average, struck from the whole mass of evidence. Clearly, there is a deficiency throughout these years of from three and one-quarter to two and three-quarter hours of sleep at each age period, a loss amounting to one night in every four among the youngest and eldest children, and to one night in every five among those at intermediate ages.

TABLE I.—HOURS OF SLEEP IN CHILDHOOD.

Years of age	Standard	Average based on 6,180 Returns
3-5	14·00	10·75
6	13·75	10·56
7	13·00	10·50
8	12·50	9·75
9	12·00	9·50
10	11·50	9·37
11	11·50	9·25
12	11·00	8·75
13	10·75	8·00

But an arbitrary average is misleading, for wide individual variations from the average exist at all ages, and certain divergences also appear between the average hours of sleep among boys and girls at corresponding ages.

Very infinitesimal are the actual numbers of children which enjoy the longer hours of sleep recorded on a few forms; but, mercifully, so also is the number of children whose rest is reduced to a wholly inadequate minimum. For instance, three boys out of 250 between three and five years old get fifteen hours' sleep, but none of the girls at corresponding ages have more than thirteen hours, and only eight of these enjoy this amount. Similarly at thirteen, though one boy out of 475 reports thirteen hours of sleep, another habitually gets but four; two out of 350 girls at this age are fortunate enough to have twelve hours in bed, while four return but half as many.

The majority of boys in six out of the nine age groups get above the average hours of sleep, the most serious deficiency—*i.e.*, less than the average—occurring at the ages of eight, eleven, and twelve; the widest variations from the average existing at eight, ten, eleven, twelve, and thirteen years of age. The girls of whom a majority get above the average hours of sleep were found in only five out of the nine groups, the most marked deficiency of sleep apparently occurring with them at eight, eleven, and twelve years. It is noticeable that the range of variation among girls is not so marked as it is with boys, probably because some of the employments in which the latter are engaged after eight years of age call them up early in the morning and keep them out of bed very late at night. Happily, as is shown in Table II., most children get more sleep in winter than in summer.

TABLE II.—PROPORTION OF CHILDREN WHO HAVE MORE SLEEP IN WINTER THAN IN SUMMER.

Years of age	Boys, per cent.	Girls, per cent.
3-5	50	50
6	40	40
7	30	40
8	50	50
9	57	60
10	65	60
11	60	50
12	60	68
13	55	73

On the other hand, the important habit of regularity in the hour of retiring to rest is constantly broken among these children; thus admitted exceptions to the nominal hour of bed-time amount, for example, to 37 per cent. among the youngest children:

TABLE III.—PROPORTION OF CHILDREN WHOSE BED-HOUR IS IRREGULAR.

Years of age	Boys, per cent.	Girls, per cent.
3-5	17	20
6	18	22
7	15	14
8	19	14
9	34	18
10	34	29
11	33	26
12	40	27
13	40	35

while the teachers were of opinion that these percentages would be much increased had strict veracity been practised, the actual hours of sleep being thus further reduced in number.

The quality as well as the quantity of sleep, too, is prejudiced by the results of defective home discipline, of parental habits, of poverty or dirt, or by the premature employment of the children as wage-earners, causes which appear to exist impartially in town and in country. Few, even little children, retire to bed before 9 p.m., while 10 and 11 p.m. are mentioned as habitual hours by an increasing number as age advances. Now physiologists agree that sleep taken before midnight is more recuperative and profound than that which succeeds that hour; late rising, therefore, is no adequate remedy for late retiring. Many young children suffer also from loss of sleep at both ends of the night.

The proportion of children systematically employed at all ages has thus more than one disadvantage—it is as physiologically detrimental as it is economically unsound. The curve of sleep for boys, *e.g.*, drops noticeably as the "errand-boy" age is attained. No less than seventy different forms of occupation are mentioned in the boys' returns, some calling for hours which, by their length, not only curtail sleep, but cruelly overtax the immature workers.

The results of my investigations bring, unfortunately, abundant evidence (1) that this most important "time law" of regular sleep is being commonly and heedlessly violated at a period of life when the instinctive, biological habit may be permanently broken, and the penalties exacted are both far-reaching and heavy; (2) that the quality of this curtailed rest is being recklessly impoverished by the self-indulgence of careless or deplorably ignorant parents during the years when these immature nervous systems are most seriously damaged by a poor quality as well as an insufficient quantity of sleep. Among the poorest, a system of false economies is permitted to prejudice health, because the miserable pittances these children's earnings represent is held of greater value than their normal, natural development into efficient, well-balanced citizens. Among the "better off," easy-going, thoughtless indulgence, a craving for excitement, and a complete failure to appreciate that the child is not an adult, permit the inexcusable persistence of conditions as regards sleep little or no better.

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HALLEY'S COMET.[1]

By Prof. H. H. TURNER, D.Sc., F.R.S.
Savilian Professor of Astronomy in the University of Oxford.

THE British Association is to meet in 1909 at Winnipeg. Before it reassembles on this side of the Atlantic in 1910 we may expect to have seen Halley's comet, which last appeared in 1835, and is calculated to return to perihelion in April, 1910. The comet will not be so striking an object as Donati's in 1858; but it is the most famous of all comets for two reasons:

(*a*) Its long sequence of appearances at intervals of about seventy-five years, which have now been verified (by Messrs. Cowell and Crommelin, of the Royal Observatory, Greenwich) back to 240 B.C.

(*b*) The circumstances in which it became associated with the name of Halley, who in 1705 first realised its periodic returns and predicted that of 1759.

Halley's discovery of the periodicity followed naturally from the great work of Newton on gravitation, which first suggested the character of the movements of comets. Newton's "Principia" was presented to the Royal Society in 1686. Only twenty years earlier, in the very first number of the *Philosophical Transactions*, we find an attempt by a certain Monsieur Auzout to predict the motion of the comet of 1664. And he claims this as a "design, which never yet was undertaken by any Astronomer; all the World having been hitherto perswaded, that the motions of *Comets* were so irregular, that they could not be reduced to any Laws." M. Auzout, however, got no further than the suggestion that the orbit lay in a plane; and in a later paper he extends his method to the comet of 1665.

What is not understood is apt to be disquieting and even terrifying, and comets had been in olden times, and were still, at that date, regarded as causing pestilence and war. Milton writes in "Paradise Lost," Book II., 708:

> ". . . like a comet burn'd
> That fires the length of Ophiuchus huge
> In th' Arctic sky, and from his horrid hair
> Shakes pestilence and war."

"Paradise Lost" was finished in 1665, and these words have been supposed to refer to the very comets of 1664 and 1665 considered by M. Auzout, which were held responsible for the Dutch War and the Great Plague of London. But Milton was by that time blind, and did not see these comets. He probably had in his mind, at any rate in addition, the much larger comet of 1618, which he had seen as a boy of ten, and which had a tail 104° long, and was actually in Ophiuchus, as suggested in the passage quoted. The great Thirty Years' War was attributed to this comet (see Evelyn's "Diary").

In the few centuries elapsed since Milton the world has forgotten its superstitious dread of comets, which are now (*a*) much more familiar and (*b*) much better understood.

(*a*) They are more familiar through the development of the telescope and increase of assiduity in searching for them. Half-a-dozen are found every year, and it would be difficult to identify their malign influences. Some are found quite by accident, as when Mr. Holmes in 1892 turned his telescope to look at the nebula in Andromeda and found a comet; or when Prof. Barnard found the faint trail of a comet on one of his photographic plates. Others spring into view almost suddenly, so bright as to be seen by several observers simultaneously. Others, again, are found by most patient searching. The great majority are never seen by the naked eye, but can readily be photographed. Such photographs show beautiful structure in the tail, which always points away from the sun, as if blown by a current of wind outwards from the sun. It seems probable that the light emitted by the sun acts much as a current of air would, and by its pressure drives away the lighter particles to form the tail.

(*b*) They became better understood from the moment when Newton announced the great law of gravitation. It was at once suggested that comets might move in orbits round the sun under his attraction. The orbits were clearly not circular like those of the planets, but Newton's work pointed to long ellipses or parabolas as alternative forms. Halley, the devoted disciple of Newton, on being appointed Savilian Professor of Geometry at Oxford in 1704, set about the task of computing the orbits of as many comets as had been well enough observed, and in his famous paper, "Astronomiæ Cometicæ Synopsis,"[1] gives computed elements of twenty-four comets, from 1337 to 1698. This involved almost incredible labour, and is in itself a title to fame. But, as often happens in scientific work, the most important outcome was unexpected. Three of the orbits were so nearly the same as to suggest a recurrence of the same comet. The elements were approximately as follows:

Date of Comet	Interval	Longitudes of Node	Longitudes of Perihelion	Inclination	Distance
	Y M	°	°	°	
1531, Aug. 24 ...		49	301	18	0·567
	76 2				
1607, Oct. 16 ...		50	302	17	0·587
	74 11				
1682, Sept. 4 ...		51	302	18	0·583

It will be seen that there are some slight differences; but the point which chiefly arrests attention is the difference in interval between the returns. Halley divined the explanation that this was due to the disturbing action of the planets. It was known that the intervals between successive returns of the planets Jupiter and Saturn were not exactly equal, and he ascribed this to their mutual attractions. How much greater might not such errors be in the case of a comet which moved much more slowly? He saw no difficulty that could not be explained, and confidently predicted the return of the comet in 1758, or thereabouts. In a later edition (not published until 1749) of his paper he reflects with just national pride that, though he could not hope to live to see the return (he was born in 1656, and died at the age of eighty-six in 1742), posterity would remember to credit an Englishman with the prediction. "Quocirca si secundum predicta nostra redierit iterum circa annum 1758, hoc primum ab homine Anglo inventum fuisse non inficiabitur æqua posteritas."

It was in every way appropriate that this grand discovery should fall to Halley. He was, as above mentioned, Newton's devoted disciple, and, more than that, it was largely due to Halley that Newton's "Principia" was ever published. It was Halley who sought from Newton, after failing elsewhere, the answer to the question, "What curve will a particle describe if attracted to a centre by the force of gravitation?" He journeyed specially to Cambridge to ask this question; and never has a more momentous journey of an Oxford man to Cambridge been taken. Newton was able to reply, to Halley's delight, "An ellipse." He had solved the problem some

[1] Abstract of a discourse to the British Association at Dublin on September 4th, 1908.

[1] *Phil. Trans.*, vol. xxv., March, 1705.

time before, and then tossed it aside as solved—so carelessly that he could not find the solution. But he sent another solution to Halley later, with much other new knowledge, which developed with extraordinary rapidity into the "Principia." When this was presented to the Royal Society it had no funds to publish it; but Halley, though then a poor man, had been formerly a rich one, and retained the rich man's contempt for financial difficulties. He published the "Principia" at his own expense, showing the same enthusiasm which was capable of taking him all over the world as captain of his own ship to try to solve the longitude problem, and later of glueing him to his chair to compute cometary orbits with unprecedented labour. It was a tremendous epoch in scientific history; and the smallest details relating to it are of interest. Fresh light was thrown upon it some years ago by the rediscovery of an autograph letter from Newton to Hooke dated November 28th, 1679. Hooke claimed that he had himself been the first to announce the solution of the question above mentioned, put by Halley to Newton, and asserted that Newton had in the first instance supposed that an attracted body would move in a *spiral* to the centre, and that he (Hooke) had first told Newton that the curve would be an *ellipse*. The letter recently discovered, and now in the possession of Trinity College, Cambridge, is the actual letter wherein Newton draws a spiral curve; but it also makes it clear that he was at the moment considering a totally different problem, viz., what would be the path *relative to the rotating earth* (not the orbit in space) of a falling body. This most interesting letter therefore bridges a gap in a most important episode.

Halley's comet returned, as he had predicted, "about 1758"—really in 1759, a little later than his rough date. The delay was due to the perturbing action of the planets, and had been anticipated by calculation; so that Halley's prediction, in making which such perturbations had been expressly recognised, was the more completely verified. The comet went round once again, and reappeared in 1835; and now we are eagerly awaiting the next return in 1910. Calculations of the circumstances of return have meantime been chiefly made by foreign astronomers, but in the last year or two Messrs. Crommelin and Cowell, of the Royal Observatory at Greenwich, have done splendid work of this kind. Mr. Cowell has suggested a method of work which greatly shortens the calculations, and, with the able assistance of Mr. Crommelin, mistakes in other calculations have been rectified, and a prediction made which should be close to the truth. The comet will be brightest in May, 1910, but a search will be made for it much earlier; indeed, the search was commenced in the autumn of 1907, though without success. It will be renewed this autumn, when success is more probable, and the comet when found will be followed along its orbit with the greatest interest by many telescopes.

But although England until recently left to others the exact calculation of modern returns, a fine piece of work on the past history of the comet is due to an Englishman, Mr. J. R. Hind. In 1849 he examined old records, especially the Chinese annals, and collected accounts of remarkable comets which could fairly be identified with Halley's.[1]

The following is his list:

Probable Early Returns of Halley's Comet (Hind).

A.D. 1456	...	1145	...	837	...	530	...	218
1378	...	**1066**	...	760	...	451	...	141
1301	...	989	...	684	...	373	...	66 A.D.
1223	...	912	...	608	...	295	...	12 B.C.

[1] *Monthly Notices R.A.S.*, vol. x., p. 51.

The comet of 1066 is represented on the Bayeux tapestry, and was held responsible for the conquest of England. Halley, who was delighted that an Englishman should be first to recognise the periodical character of the comet, would no doubt have been deeply interested by this curious association with an important epoch in our history had he been led to suspect it.

The verification of these dates, rendered probable by Hind, has been nobly carried out by the Englishmen above mentioned, Messrs. Cowell and Crommelin. (Mr. Crommelin is an Irishman, but an assembly of the British Association in Dublin takes no note of such details.) Mr. Crommelin wrote to the present lecturer on July 28th last:

"We have now carried back Halley's comet to B.C. 87 (August) with certainty (one revolution earlier than Hind's list), and with fair probability to B.C. 240 (May). Before this observations are completely wanting. Hind is one and a half years too late for his 608 (A.D.) return (it really was 607 March), but all his earlier returns are right up to the beginning of his list (−11 = B.C. 12). We find 1910 April 12·9 for the next passage, but are going over the work again by a new method."

This date makes the comet at its brightest, to our earthly view, in May, 1910. In that month there will be a total eclipse of the sun, visible in Tasmania, and the most glorious view of the comet obtainable at this return will probably be that accorded to those in Tasmania during totality.

The year 1910 is also the tercentenary of the first use of the telescope by Galileo. We are reminded how much we owe to astronomical work in the three centuries since elapsed. Not merely are we no longer terrified by comets; our whole conception of the magnitude and meaning of the universe has been changed. Much of what we have gained we owe to Halley, who showed that comets were no strange monsters, but members of our family (solar) circle; and, far more than this, elicited the "Principia" from Newton. When we see Halley's comet let us think with reverence of this great Englishman and his work.

HISTORY AND CURRENT EVENTS.

OUR readers doubtless followed with much interest the development and history of the last Education Bill. Had they enough leisure of mind to note the light it threw on the British Constitution and the methods of legislation? Our text-books always tell us that Parliament, and especially the House of Commons, is the legislative body, that it is in the two Houses that laws are debated, and that it is by the united wisdom of our elective and hereditary "legislators" that the policy of this country is shaped, whether in home or foreign politics. Yet how unreal was the debate in the House of Commons early last month! The decisive struggle was taking place, not within those walls, but in a correspondence between the Archbishop of Canterbury and two members of the Cabinet. When these "mighty opposites" failed to agree, the talk in Parliament was ordered to cease. And it ceased. What is the law-making body?

AT the beginning of last November the people of the United States of America chose the persons who, on the 2nd of this month, are to choose the successor to Mr. Roosevelt. The votes of these electors will not be counted by the Congress until the 10th of next month, and the inauguration of the new President takes place on March 4th. The fathers of the American Constitution would be

astonished to hear that we already know who is to be the new President. "How can the news of these elections," they would say, "be already known over so large an extent of territory? How do you know whom these electors will choose? It must take time and thought for these responsible men to find the man who, in their judgment, is fittest for the high position of chief executive." To which the moderns reply, "Most worthy Shades, there is such a thing as an electric telegraph, which makes the United States even smaller than they were in your time. But much more: the people whom you distrusted have broken through the barriers you so carefully erected to guard against the consequences of their want of wisdom and knowledge, and now the electors are chosen 'on a ticket'—*i.e.*, they pledge themselves beforehand to vote for one or other of certain presidential candidates whose names are already known to the whole country."

To explain, either to the mighty dead or to our present readers, all that constitutes a presidential campaign in the United States would take much more space than is at our disposal. Is it not all written in the book of Dr. Bryce? *There* will be found what a party convention is, what a caucus; how, though the party may be divided before the convention, they are unanimous after it; and much more, to which we cannot even now allude. We will therefore confine ourselves to one illustration, to show the results of maintaining the four months' interval between the choosing of the electors and the beginning of the new reign which was necessary in times of slow communication, but which is quite purposeless now. Forty-eight years ago, in November, 1860, it was evident that Abraham Lincoln would be chosen President. He was not inaugurated until March, 1861. The Southern States used the interval to complete their preparations for secession. Lincoln could do nothing against the "rebellion" until noon on March 4th.

ITEMS OF INTEREST.

GENERAL.

The most recent attempt of the Government to settle the education "difficulty" has proved abortive. Mr. Runciman's Bill has been withdrawn. Little, if any, progress has been made; and moderate men with a real regard for educational efficiency are oppressed with a feeling of perplexity and despondence. "Contracting out," unsatisfactory though it is from the educational point of view, might conceivably have been worth while in a limited number of cases, if this had served to tranquillise the religious difficulty bogey; but as an expedient applicable to any considerable section of our primary-school system it commends itself to very few who know intimately the determining factors in local life in many parts of the country. Of the future of English primary education it is perhaps wisest to say nothing just now. It would appear to be unlikely that the present Government will have anything more to do with the matter, and what may happen in the next is conjecture, pure and simple. It remains a saddening reflection that it should have proved impossible, at the beginning of the twentieth century, for the leaders of religious and political thought to discover a possible solution of an undignified controversy.

Traditional methods of teaching the various subjects of the school curriculum have one by one fallen into disrepute. For some time reformers have been at work trying experiments and suggesting new lines of approach in one subject after another. Science, mathematics, modern languages, English, and geography has each had its turn, and now history is being subjected to examination and revision so far as the manner of teaching it is concerned. The Board of Education, in Circular 599 and a Memorandum in explanation thereof, has dealt in outline with the Teaching of History in Secondary Schools. The circular and memorandum are conceived in the broadest spirit, and we are sure they will be welcomed by earnest teachers everywhere. The gist of the advice offered seems to be the wisdom of learning how and what to omit in teaching the history of the home country, and how with a minimum expenditure of time to draw upon the history of Europe to make the lessons in English history really intelligible. As in previous circulars dealing with other subjects, the Board urges the necessity of making one subject assist another. History can only be taught satisfactorily when it is co-ordinated skilfully with the instruction in literature and geography. Teachers must learn, if full use is to be made of the available number of school hours, that the subjects of the curriculum are not sharply divided one from the other; and unless there is an abundance of consultation among different members of the staff and a persistent desire to assist in developing various subjects, time will be lost and efforts prove futile. The circular of the Board is of great interest, and we hope to deal with it much more fully in our next issue.

The London County Council has arranged to hold another conference of teachers on January 7th, 8th, and 9th. There will be two meetings on each day, from 11 a.m. to 1 p.m. and 2 p.m. to 4 p.m. The meetings will be held at the London Day Training College, Southampton Row, W.C. A discussion will follow the addresses on each occasion. At the meeting on January 7th, at 11 o'clock, addresses will be delivered on Open-air Education by Mr. G. G. Lewis and by Miss Beer. The discussion will be opened by Dr. Frederick Rose. At 2 o'clock addresses will be delivered by Dr. H. H. Hulbert on "The Scientific Basis of Vocal Culture," by Dr. W. G. McNaught on "The Teaching of Singing," and by Dr. H Walford Davies on "The Value of Training in Music in General Education." At 11 a.m. on January 8th addresses will be delivered by Dr. J. Kerr on "The Physical Training of Children under Five," by Miss G. E. Heaven on "The Mental and Moral Training of Children under Five," and by Dr. Marion Hunter on "The Nursery School as a Stage in the Child's Development." At 2 o'clock addresses will be delivered by Mr. T. Luxton on "A Junior Technical Day School for Boys" and by Mr. F. Jeffery on "An Experiment in Technical Education for Boys." On January 9th, at 11 a.m., Miss Polkinghorne will speak on "How to Develop the Child's Expression of Ideas," Mr. E. J. Kenny on "The Teaching of English Composition," and Miss Gill on "Visits to Picture Galleries." At 2 o'clock Mr. H. Way will read a paper on "Paper and Cardboard Modelling," Mr. F. W. Farrington on "Clay Work for the Lower Standards," and Mr. H. W. N. Heitefusz on "Practical Arithmetic." No charge will be made for admission to the conference. Application for tickets of admission should be made to the Chief Inspector, Education Department of the London County Council, Victoria Embankment, W.C.

The annual general meeting of the Association of Assistant-masters will be held at St. Paul's School, West

Kensington, London, W., on January 8th. The adoption of the annual report will be moved by the retiring chairman, Mr. R. F. Cholmeley, and the annual statement of accounts will be presented by the treasurer. Mr. J. Whitehead, of Berkhamsted School, will move: "That in the opinion of this association no assistant-master should sign an agreement (*a*) if it provides for the possibility of his dismissal at any time other than at the end of a school term; (*b*) or if it does not provide that at least two months' notice should be given him, save in cases of grave misconduct; (*c*) or if it does not provide that before the dismissal takes effect, the assistant-master concerned shall be given the opportunity of appearing before the governing body in his own defence." Important resolutions on the subject of a pension fund for secondary-school teachers and the Teachers' Register will be submitted by the council. In the afternoon Dr. W. H. D. Rouse will deliver an address entitled "A Dream"; Mr. Winbolt will move: "That this association approves of the scheme for the pronunciation of ancient Greek formulated by the Classical Association"; and Mr. G. Warre-Cornish will read a paper on "The 'Specialist' and 'Form' Systems in Secondary Schools compared."

A MEETING of the School Nature Study Union will be held at the College of Preceptors, Bloomsbury Square, London, W.C., on January 29th at 7.45 p.m. Mr. W. Williams, chief officer of the L.C.C. Botany Scheme Offices, will lecture on "School Gardens, their Nature and Management." Full particulars of the work of the union may be obtained from the general secretary, Mr. H. E. Turner, 1, Grosvenor Park, Camberwell, S.E.

THE annual general meeting of the English Association will be held at University College, Gower Street, on January 15th and 16th. After the business meeting on January 15th Prof. W. P. Ker will lecture on "Romance," and in the evening the members will dine together. The president, the Right Hon. A. H. D. Acland, will be in the chair. On January 16th there will be discussions on "English in Elementary Schools" and on "Examinations in English." Further information can be obtained from the secretary, Miss Elizabeth Lee, 8, Mornington Avenue Mansions, London, W.

THE annual meeting of the Historical Association will be held on January 8th and 9th at University College, Gower Street, London, W.C. On January 8th, at 6 p.m., Mr. Sidney Webb will deliver an address. On January 9th, at 10.30 a.m., Mr. H. A. L. Fisher will read a paper on "The Teaching of European History in Schools," which will be followed by a discussion. We are informed that the association has started a lending library for the use of members. The leaflets published by the association have been bound together, and can be purchased in book form. Further information concerning the association can be obtained from the secretary, Miss M. B. Curran, 6, South Square, Gray's Inn, London, W.C.

LAST August the Association of Assistant-masters arranged a course in practical physics at the Cavendish Laboratory, Cambridge. Those schoolmasters who attended the course expressed a wish that another might be held in August, 1909. It is, therefore, intended to continue the course, and, if there is sufficient demand, to arrange others in chemistry, history, and theory of education, or such subjects as may be required. The courses take place during the first three weeks of the month of August, and are open to all assistant-masters in secondary schools. If a sufficient number of men arrange to attend the courses, facilities will be arranged for obtaining recreation, in the form of golf, tennis, cricket, and rowing. The secretary of the association (31, Great James Street, London, W.C.) will be glad if assistant-masters will let him know as soon as possible if they are willing to attend one of the three above-mentioned courses, or whether they would attend a course in any other subject, if arranged.

As a result of the campaign against tuberculosis now being carried on throughout the world, many of the public schools in the United States are taking a new departure in teaching the children the nature, causes, dangers, and prevention of consumption. The Massachusetts educational authorities, acting under a law of the Legislature of 1908, are establishing courses of instruction on tuberculosis in all of the schools of the State. In addition to these public movements many of the private organisations throughout the country have established, and are establishing, open-air schools for consumptive children, it being estimated that about 2 per cent. of the pupils in the larger city schools have tuberculosis. The first public school for consumptive and pre-consumptive children to be established in the United States was opened in Providence, R.I., last January. The work is done entirely in the open, and the benefits of the fresh-air treatment are combined with the teaching and training of the public schools. This experiment led to other movements, both public and private. Many other similar schools have been inaugurated. In addition to these specially conducted schools several of the States require that the important facts about tuberculosis shall be taught in the lower grades of the public schools. It is expected that within five years the majority of children in the United States will be taught concerning the evils and dangers of tuberculosis before they leave the lower grades of the public schools.

WE have received from Mr. Henry W. Crees a copy of an essay he has written embodying the observations he made on the colleges and universities during a year's travelling in the United States and Canada. His point of view is that of a student; and much interesting information is provided as to the power of self-help shown by the university students across the Atlantic. To pay their way, the students are willing to do practically anything that presents itself. Some of the favourite occupations are companionship to younger boys in vacations and in unoccupied hours, or looking after a wild fellow at college, tutoring other students for entrance examinations, clerical work, proof-reading, waiting on their fellow-students at clubs and in dining halls, managing dining and other clubs, reporting for newspapers, and teaching in evening schools; but many are engaged in pattern shops and other engineering jobs, canvassing, and even as household servants to professors. A man whom Mr. Crees met at the School of Mines, Golden, Colo., was not only working his way through the mining course, but had also kept himself while at the high school by delivering papers *at* 3 *a.m.* in Denver. He also tended to the furnaces in a church. In the vacation he goes as a miner. At Golden he waited at table at one of the students' eating clubs in return for his board, and by looking after furnaces he pays his room rent. Such things as selling a dictionary helped to bring grist to the mill for the other necessaries. An English student spoke of him in the highest terms as an

all-round popular man who, with all these disadvantages, had time to play for his college football team!

IN accordance with our practice on several occasions we give the alternative subjects prescribed for an essay in the mother tongue at the leaving certificate examinations in Swedish secondary schools. There are two examinations —the old-established "Maturity Examination," qualifying for admittance to the University, and usually taken at about the age of eighteen or nineteen, and the newer "Realskole Examination," qualifying for admittance to various "practical" employments, and usually taken at about the age of sixteen or seventeen. The examinations are held twice a year, at the end of each term, and the following subjects were set to the middle of November last. For the higher certificate: The signification of Jesus' words, "Thou shalt love thy neighbour as thyself"; Julian the Apostate; Alexander I. of Russia; Queen Christina after her abdication; the Swedish judicial system; Strindberg's "Master Olof"; tundras and steppes; evidences of the earth's rotation; soda, its preparation and chief uses; the significance of communication in the development of a country. For the lower certificate: How was the Reformation introduced into Sweden? What do you know about the moon? Bathing and swimming; describe an episode from "The Barber Surgeon's Stories" (by Topelius, the most popular book in Swedish); a railway or canal journey; digestion in man; glaciers.

THE December Cambridge Local examinations were held at 229 centres in the United Kingdom and the colonies. The total number of candidates (15,668) shows only a slight decrease as compared with the number entered in December, 1907, notwithstanding the increase in the entry for the recently established July examination, for which there were this year 6,328 candidates. A falling off in the candidates for the preliminary and junior examinations is about counterbalanced by an increase in the number of senior candidates.

THE annual report of the Queensland Minister of Education, which has now been published, shows that the total number of schools open in Queensland is 1,067; the gross enrolment is 105,382 pupils—one-fifth of the population. The average daily attendance is 71 per cent. of the net enrolment. There are 2,396 teachers. The gross educational expenditure in 1907 was £342,600. As to technical education, there are sixteen colleges in operation at different centres; ten grammar schools are included, six for boys and four for girls. A system of scholarships and bursaries passes on promising State pupils to the grammar schools, and thence to the Australian universities. To show how paternal is the educational system of Queensland, it may be mentioned that the Education Department has under its charge eight orphanages, with 1,962 children under State control at a cost for 1907 of £22,722.

THE report of the New Zealand Education Department for 1907 shows that at the end of the year the secondary schools giving free tuition to duly qualified pupils and receiving grants numbered twenty-six, as against twenty-three for 1906. The total number of pupils on the roll of these schools was 3,579, and of this total 2,468 (1,335 boys and 1,133 girls), or 70 per cent. of the roll-number, were given free places at a mean average cost to the Treasury of £8 13s. 6d. per pupil; the approximate annual rate as determined on the payments for the last term of the year being £21,596. In 1906 the number of such free pupils was 2,435, and the approximate annual rate £21,240, with a mean capitation of £8 17s. 4d. per pupil. In addition, free tuition was given to 245 holders of scholarships or exhibitions. Further, however, in reckoning the amount of free secondary education in the Dominion must be included an almost equal number of pupils in attendance at the secondary classes of district high schools. There were on the roll of the secondary departments of these schools 2,452 pupils who had passed through the elementary-school course and were in receipt of secondary-school instruction not differing much in character from the instruction given in the secondary schools. All but a comparatively small number of these were free pupils, receiving free tuition at a total cost to the Government in salaries of £19,961, and an average annual cost per pupil enrolled of £8 2s. 10d. There is thus an approximate total of 5,187 pupils receiving free secondary education, exclusive of those holding free places at technical schools.

THE first number of the *Internacia Pedagogia Revuo* has just appeared. The aims of its founders are to discuss pedagogical questions of all kinds, to collect and disseminate international information and reports which affect education in any way, to facilitate correspondence between teachers of all countries, to arrange an exchange of homes for the vacations, &c., and generally to do for the collective countries that which every national organ does for its own country. As the organisers belong to eighteen countries, the language would have been an insuperable difficulty except for Esperanto, in which language the magazine is printed. The three most important articles in the first issue refer to the education question in Holland, the congress of Slavonic teachers at Prague, and the salaries of Scottish teachers. Prof. Marechal, of the Northern Institute, Leeds, is the president, and Mr. W. J. Clark, of the Grammar School, Reading, one of the committee for the English section.

MR. A. J. JOHNSON, Coppetts Road, Muswell Hill, London, N., has prepared a series of lantern-slides to illustrate Shakespeare's life and plays. The slides are in many cases from drawings by Sir John Gilbert and other artists. Among plays for which slides are available may be mentioned "Macbeth," "Julius Caesar," "Tempest," "Richard II.," "Henry V.," "Merchant of Venice," "Twelfth Night," and "As You Like It."

As we go to press the meeting of the Headmasters' Conference is being held. Already several important questions have been discussed. The constitution of a Registration Council under the Education (Administrative Provisions) Act of 1907 has been considered, and representations are to be made to the Board of Education. The Warden of Bradfield has introduced the question of establishing a closer touch between the Board of Education and the authorities of the non-local schools, both through inspection and other direct means of communication. In addition, the emoluments attached to entrance scholarships have been discussed, and the recent report of the Educational Science section of the British Association has been generally approved. Matters which will receive consideration before the meeting concludes are: the relation of schools to the Army Council; the status of school cadet corps; the number of languages boys should study before fourteen years of age; the study of German; and the standard of the school certificate examination conducted by the Oxford and Cambridge Joint Board. We hope next month to summarise the conclusions at which the Conference arrives.

MR. R. F. CHOLMELEY, of St. Paul's School, has been appointed headmaster of Owen's School, Islington, in succession to Mr. J. Easterbrook, who is retiring at Easter.

SCOTTISH.

THE Education (Scotland) Bill, after a protracted and perilous passage, has at last reached the safe haven of Acts. This is the fifth Bill on Scottish education that has been submitted to Parliament within almost as many years, and the first to get a place on the Statute-book. On several occasions it seemed as if the latest Bill were to have the fate of its predecessors, as the opposition became more dominant and insistent the nearer it approached port. However, this opposition was in a large measure bought off at the closing stages by a liberal jettisoning of contentious clauses. Indeed, in the general *débâcle* some highly valuable principles were needlessly sacrificed. This is specially true of the cumulative vote. Its proposed abolition evoked general applause from the main body of Scottish opinion; but at the very last the Government gave way before the opposition of a small but resolute body of sectarians. The cumulative vote is merely an ingenious device for the over-representation of minorities and has done much to reduce school-board elections to a farce. Yet the new Act contains valuable and far-reaching clauses, and the Secretary for Scotland is to be congratulated on succeeding where so many others have failed.

THE autumn meeting of the Classical Association of Scotland was held this year in Edinburgh University. The proceedings were of quite exceptional interest. The paper by Prof. Lodge on the teaching of ancient history threw much light on all teaching of history. In the lower forms he held that the teaching of history should take the form of simple narrative or simple biography. It was purely a training of the imagination, and for this purpose ancient history had conspicuous advantages. The scene was simpler, the action less complicated, and the form more epic and dramatic. The Persian wars were more easy to understand than the wars of Napoleon, and for the same reason the figure of Themistocles was more easily grasped than that of the younger Pitt. But whatever period of history was studied, it would be found that the two main hindrances to effective work were (*a*) the tyranny of the text-book and (*b*) the tyranny of the special period. The text-book was a good servant but a bad master, and in the hands of all but specialists it was apt to be a master. History required specialists quite as much as mathematics and classics. Only thus could the dry bones of history be clothed in living flesh and blood. The concentration of the attention upon a special period was apt to destroy the sense of perspective and proportion in history. A fairly complete outline of general history should be mastered before there was any concentration upon a particular period. It was with very sincere regret that the meeting learned that Prof. Ramsay was compelled by reasons of ill-health to resign the presidency of the association after a fourteen years' tenure of office. Prof. Ramsay is the grand old man of classical study in Scotland, and even his temporary passing from the active leadership of the association is a grievous loss at a moment when the classics are fighting for their very existence in school and university. In Prof. Harrower, of Aberdeen University, the association has found a worthy successor, who has all along taken an active share in its councils.

SIR HENRY CRAIK, in opening a new science room in an Edinburgh school, said that a parrot-cry was abroad over the land at present for uniformity and unification in education. Personally, he was a strong advocate of variety in education and variety in the types of schools. To drive all schools into one mould, and have these under the same control, supported from the same resources, and aiming at the same ideals, was, he maintained, the surest way to retard advance. Progress everywhere resulted from differentiation of type, and not from uniformity. He had no belief in the cast-iron systems of Germany and France, where every detail of school curriculum and school method was determined by the Minister for Education. Sir Henry Craik also put in a plea for maintaining schools outside the public-school system. Public control necessarily brought with it a certain measure of restriction and dependence, and it was well that they should have in their national system other institutions perfectly free to develop on lines other than those of the predominant educational authority.

THE annual meeting of the Association of Teachers in Secondary Schools was held in the humanity class-room of Edinburgh University. Mr. John Alison, George Watson's College, was appointed president for the ensuing year, which is also the last of the association's existence as a separate body. In October, 1909, the united association of secondary-school teachers will come into existence, and a greatly extended sphere of usefulness and influence may be predicted for it. Motions were passed by the meeting expressing hearty approval of the terms of Circular 413, and asking that the options allowed to ordinary secondary-school pupils should also be extended to junior students.

EDINBURGH UNIVERSITY has decided to bring the three-term session into operation this year. The first term is to extend from October to December, and to be followed by a vacation of four weeks; the second term will extend from February to March inclusive, and the third term from May to the beginning of July. In the summer term the classes are to meet only three times a week, and throughout the session lectures are to alternate with tutorial work. Drastic changes are to be made in the conditions for graduation. A student who is awarded a first- or second-class certificate at the end of the second term may be exempted from attendance at the third term, and such student will be held *ipso facto* as having graduated in that subject. While this principle has certain theoretical advantages, it is to be feared that its practical application will lead to a serious lowering of the university standard. Exclusively internal examinations have been tried in other places, notably in America, and have always led to grave abuses. The Medical Council has raised the standard of medical education only by resolutely insisting on external examiners being associated with the college professors, and there is small likelihood of them going back to the bad old days when each examining body had a standard of its own. The faculties of arts and science, unwarned by experience at home and abroad, are setting out on a perilous venture, which can only prove successful by eliminating human nature from the university staff.

THE Provincial Committees have at present before them proposals for a readjustment of the curriculum of the students in training. Unfortunately, these proposals are regarded by teachers as of a seriously reactionary character. Their general effect, it is contended, would be to restrict the period of training for elementary-school teachers to *two* years. Under existing conditions, almost 50 per cent. of the students are pursuing a training course at the university on the basis of a three years' curriculum. The great majority of these are preparing for work as ordinary elementary-school teachers. But now it is proposed to change all this, and give the benefit of a third and fourth

year's course only to a select few. The elementary schools of the country are more than ever in need of men and women of the widest scholarship and culture, and the general public are directly interested in seeing that the teachers of their schools are not necessarily restricted to a course of training less ample and less broad than that given to teachers of secondary schools.

AT a meeting of the Modern Language Association, Dr. Schlapp, of Edinburgh University, submitted a report on the memorandum on modern language study in Scotland. The main conclusions arrived at were as follows: (*a*) that variety of curriculum should be encouraged in schools; (*b*) that the intermediate curriculum should allow freedom for beginning three languages other than English by relieving pupils from science or drawing in the third year of the course; (*c*) that in the leaving certificate examinations the proficiency of the candidates in each subject should be indicated by the terms "fair," "good," and "excellent" in the certificate; (*d*) that modern languages should be placed on an equality with classics in the bursary competitions of the universities; and (*e*) that the lectureships on modern languages should be raised to professorships.

IRISH.

MORAL education seems to be in the air. Perhaps the Congress on Moral Education induced the professor of education in Trinity College, Dr. Culverwell, to choose last term for the subject of his public lectures on education "Some Chapters in the History and Theory of Moral Education." This interesting series was delivered in November and December, and the headings were "Ancient Methods and Ideals in Moral Education—Jewish, Spartan, and Roman"; "The Rise of Free Thought in Greece, and its Disintegrating Effect on Ancient and Modern Morality"; "The Modern Problem of Moral Education, as seen in its extreme form in France"; "The Herbartian Theory of Moral Instruction"; and "Special Methods of Reformation—the George Junior Republic." The republic referred to is an institution founded in 1895, and is a free, self-governing community of boys and girls with a bad moral record, whether convicted criminals or otherwise.

MUCH discussion and speculation have been indulged in during the latter part of the year as to the nature of the inspectorate about to be appointed by the Intermediate Board. It is understood that, in addition to the two assistant commissioners, two senior inspectors and four junior inspectors will be appointed. The first question is: where are they coming from? Irish teachers are naturally anxious that they should be found in Ireland, and questions have been asked in Parliament to this effect, but the important thing is to get the most competent persons possible, and this is vital for Irish secondary education. The women teachers have raised the question as to women inspectors, and are urging their claims, but it is doubtful whether they will be considered at the present time, especially as a considerable number of women teachers believes that such an appointment would tend to mark a line of cleavage between boys' and girls' schools to the detriment of the latter. Perhaps a more important point is as to the payment of the inspectors. Who is providing the money? As to this, there has at present been no definite statement, and if in the end it is deducted from the school grant, inspectors will start their work under serious protests from the schools, which are all too inadequately financed as it is.

THE all-important matter is as to the functions of inspectors, and what they are to do. It is understood that there is likely to be a conference between the representatives of the Intermediate Board and the Consultative Committee representing the heads of schools, and if the conference be genuine and *bona fide* it may largely clear the ground and provide a basis of general agreement on this, which is the main question. It is pretty clear from the feeling in Ireland that it would be best for the Board to proceed slowly, and to allow the present system of examinations to continue for a time, while the new inspectors are feeling their way. There is much for inspectors to do, but it will be done better if it is not done in a hurry.

THERE is still plenty of strong feeling in reference to the action of the Board concerning the rule which will, after 1909, prevent students from passing twice in a grade. This is another matter on which the schools would like to understand clearly the policy of the Board. Is the rule only suspended this year because the system will be radically altered in the following year by inspection? If not, then the Board would be well advised to listen to memorials which have been sent in from different associations asking them to abandon the innovation altogether. It will cause much ill-feeling, about which the Board seems at times indifferent, forgetting that the interests of education demand that in all reforms the goodwill of the teachers should not be alienated.

LITTLE progress has been made as yet with the new universities. So far as the public is concerned, the most attractive controversy rages round the battle-cry of compulsory Irish. The Gaelic League seems bent on forcing this to the front, and insisting that a knowledge of Irish shall be compulsory for matriculation in the new Dublin University. A large meeting in support of this view was held in Dublin in December, and severe criticism passed on Dr. Delany, president of University College, who is known to be opposed to it. The decision one way or another is fraught with tremendous possibilities, and it would seem best to abandon the extreme course, and to give the Irish language every encouragement possible without insisting upon it as a *sine qua non* for every student. The first meeting of the Senate of the new National University took place in Dublin on December 17th. The names of the constituent colleges are announced as "University College, Dublin; University College, Cork; and University College, Galway."

WELSH.

THE Organiser of Education for Denbighshire has prepared a return showing the progress made in the council rural schools since June 1st, 1904, when the County Education Committee came into existence. It appears that five new schools have been provided for the benefit of rural children. Arrangements have been made in about twelve rural schools for instruction to be given in cottage gardening, and it is proposed that this subject, so far as circumstances permit, shall be included in the curriculum of every rural school in the county. There are now eighty-four schools classed as rural in the county, including the five new ones. Of the eighty-four schools, fifty-one are "non-provided." In nineteen schools the staffs are now equivalent for the same number of children as on the "appointed day," and in eight the teaching capacity is slightly less, but in all the other fifty-seven an increased staff has been provided. In only six schools are the total salaries paid less than in 1904, while in nearly all the remainder the extra cost of the staff is considerable.

IN connection with the reported decrease in the Merthyr evening continuation schools, the Organiser of the Education Committee states that the work of the schools does

not appear to be of a sufficiently interesting and practical nature to attract the students. The work done was, he states, too much on the lines of the ordinary elementary schools. No doubt the teachers were doing their best, but they seemed not to adapt themselves sufficiently to the different conditions of evening-school work. He recommends that, as soon as the evening continuation schools are closed, there should be a special course of training for teachers engaged in this particular class of work, and that, in the meantime, a proper scheme of work for these schools should be taken up and arrangements be made for the teaching of such subjects as handicraft for boys and housewifery for girls.

THE Cardiff Teachers' Association has recently protested against the conditions under which work has to be carried on in the class-rooms in the winter afternoons. In the rooms which are lighted by a central pendant with flare lights, only a few of the pupils can work free from the conflicting shadows, and there is great strain on the eyes of those seated near the corners. In more than one classroom during the winter the time-table had had to be abandoned and filled in with oral and simultaneous work because of the time taken to replace broken mantles in the incandescent burners. It was suggested that in the winter, schools should meet in the afternoon at 1.30 and close at 4 o'clock.

THE Swansea Education Committee has been considering the question of length of holidays in the girls' intermediate schools. The opinion was expressed that thirteen weeks in the aggregate was excessive. The headmistress said she should like the committee to inquire into the subject. If teachers were going to have fresh subjects to teach, and to teach them well, with real preparation for university work, there must be time given. The suggestion was made that the holidays for the intermediate school be the same as for the municipal secondary schools, but the chairman pointed out that time for preparation for work in the higher schools is a *sine qua non* for good work. The question of holidays was referred for report.

THERE is a proposal before the county authorities to increase training-college accommodation by the provision in South Wales of two county training colleges, one for men at Barry and one for women at Caerleon. The proposal is to provide a college at Barry for the reception of 120 Glamorganshire men students and thirty Monmouthshire men students, and at Caerleon for sixty Glamorganshire women students and forty Monmouthshire women students. It is stated that the newly erected council school at Christchurch, near Newport, will be affiliated to the training college at Caerleon as a demonstration school, and will be one of the best-staffed schools in the country.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Pensées, Maximes et Réflexions de Pascal, La Rochefoucauld, Vauvenargues. Edited by A. T. Baker. xxx+132 pp. (Macmillan.) 2*s*.—The introduction and notes are all that could be desired. Pascal is represented by "Pensées" only; some extracts from the "Provinciales" would have been interesting. La Rochefoucauld contributes 116 of his "Maximes," and three "Réflexions Diverses" ("De la Confiance," "De la Société," "De la Conversation"). There are 127 "Réflexions et Maximes" by Vauvenargues. The "summary of the chief grammatical peculiarities occurring in the text" is a valuable addition; but we cannot help resenting, in a book of such high literary value, appendices of "words and phrases for *viva voce* drill." The "subjects for free composition" (erroneously called "word-formation" on p. 97) are likely to be useful.

Practical French Reader. By J. F. Davis and F. Thomas. 159 pp. (Omega Press.) 2*s*.—An acceptable series of 127 short French extracts in prose, ranging in length from six to twenty-five lines; there are also twenty verse extracts, nearly all fables. The book is almost free from misprints, and the vocabulary appears to be complete. It is to be feared that there is a demand for such books, and that in many classes preparing for examinations books of snippets take the place of literature.

The Alphonse Daudet Reading Book. Edited by J. S. Wolff. vii+134 pp. (Arnold.) 1*s*. 6*d*.—Miss Wolff is well known as a very capable writer and editor of school books. The present volume is very good indeed. The extracts are very well chosen, the notes are good, and the life of Daudet is quite excellent. We recommend this book most warmly.

Graduated French Composition. By Henri Bué. viii+154 pp. (Hachette.) 10*d*.—The first section of this little book consists of "French Guides and English Texts": that is, simple French passages are followed by the English rendering, except that the plural has been substituted for the singular, the past for the present, &c. The second section contains English passages only; these are supplied with notes giving hints and renderings. In addition, there are some remarks (grammatical and general), and English-French and French-English vocabularies. To those who believe in French composition "for beginners and elementary classes" this book can be recommended.

V. Hugo, La Légende des Siècles. Edited by G. F. Bridge. xxxii+179 pp. (Oxford: Clarendon Press.) 3*s*. net.—The task of selecting from the "Légende des Siècles" was not an easy one, but the editor puts before us a very representative series of extracts, many of which will be unfamiliar to the average reader. Mr. Bridge's introduction seems to us particularly good; the brief biographical sketch gives all that it is essential to know; and the notes are very satisfactory, much thought and labour having evidently been devoted to them. This makes a very valuable addition to the Oxford Higher French Series, edited by M. Delbos.

French Fables in Action. By Violet Partington. 51 pp. (Dent.) 1*s*.—Here we have ten of the most popular of La Fontaine's fables developed, modernised in speech, and arranged as plays. Miss Partington is to be congratulated warmly on the happy idea of introducing the *ample comédie, à cent actes divers*, to the very young, and on the eminently successful manner in which she has carried it out.

Phonetic French Reader. By S. A. Richards. 118 pp. (Dent.) 1*s*. 4*d*.—The earlier part of this book contains phonetic transcriptions of carefully graduated prose and poetry, which is intended to be read before proceeding to the conventional spelling of the same extracts in the pages following. Interesting and carefully transcribed, these selections should prove a valuable help in preserving a good, and in correcting a faulty, pronunciation.

L'Entente Cordiale à la Campagne. Scenes of French Life. With Notes by Clémence Saunois. viii+102 pp. (Dent.) 1*s*. 6*d*.—Another welcome little volume is herewith added to Dent's Modern Language Series. In twenty-

six bright scenes the writer describes a summer holiday spent with a French family in Franche-Comté by a young Englishman and a young lady compatriot. Lively and intelligent conversations on general topics, local celebrities, history and geography, are introduced. A third part of the book is devoted to notes, written in French, which are adequate, and praiseworthy on account of their clearness and conciseness.

Classics.

Virgil. Translated by John Jackson. 424 pp. (Oxford: Clarendon Press.) 3*s.* 6*d.* net.—There is a good prose translation of Virgil in the Globe Series; but the present translation is welcome. We have examined the usual cruces, such as *incipe parve puer—sunt lacrimae rerum—mene fugis*, and so forth, where a novice may easily go wrong; and generally Mr. Jackson is right. Sometimes, however, he misses the point: as in the emphasis of *mene incepto desistere victam*. Difficulties such as the rendering of *pius Aeneas* are well met: *pius* is rather "gentle" or "kind" than "good," but "good Aeneas" is not an unfair rendering. If Mr. Jackson begins the "Aeneid" with "arma virumque cano," he has many to support his view, although we hold strongly that literary taste makes it impossible; probably the general view will change before long under the influence of the Oxford Latin text. The style of the translation is thoroughly good, simple without vulgarity, and with little affectation of archaism. But he does at times fall into an iambic rhythm that mars the pleasure of reading.

Gotham and other Stories. A Latin Reading Book in usum tironum. By Rev. E. D. Stone. xii + 120 pp. (Macmillan.) 1*s.* 6*d.*—We can speak with unqualified praise of this little book. It contains a number of witty and entertaining stories in simple Latin: animal fables, short extracts from Erasmus, the pranks of the Wise Men of Gotham, proverbs, Latin verse readings of English poems, or original pieces, all bright and easy, but containing plenty of practice in the uses of syntax. There are also a few extracts from Virgil and a list of passages that may be read afterwards. There is a vocabulary. This book may be used for rapid reading, or the pieces may be read out by the master for the boys to reproduce in their own words.

Limen: a First Latin Book. By W. C. F. Walters and R. S. Conway. xxii + 376 pp. (Murray.) 2*s.* 6*d.*

Limen Appendix: Suggestions for Teachers on the Oral Method. By W. C. F. Walters, R. S. Conway, and R. H. Rees. 24 pp. (Murray.) 6*d.*

Limen marks a step in the improvement of Latin teaching which we hope will be the starting-point for other steps. The compilers have rightly seen that the language must in some way be made living, and they very soon (Ex. xi.) begin to make their reading lessons sensible; before long, these lessons lead up to stories from Roman history, and descriptions of Rome, and discussions of literary matters. On the other hand, the work is based from the first on translation from and into Latin, not on the expression of thought in Latin, and the early exercises, with too many of the later, are not sensible. Take Exercise no. ii. (p. 14): "Give the English of: pārēs, nūntiās, mōnstrās, vocā . . . Give the Latin of: fear (sing.), to remain, save (plur.), see (plur.), you bid . . ." This, we hold, is essentially wrong, and it is ineffective; the same thing can be done better without the boredom inevitable to the beginner on this system. We have no quarrel with unconnected sentences of English for translation, if based on some passage read (as on p. 111, for instance); that is quite different, its reason is recognised, and the interest of the piece read reinforces it. But it is, we believe, of the first importance to appeal to the reason in the early exercises. For actual use, again, the matter is not so well arranged as it might be. Pronouns, for example, are needed very early. The print also is puzzling to the eye. But these faults will correct themselves, we hope. It is not likely that the intelligent teacher will be content with this when he begins to work out the principles suggested by it. These he will find illustrated in the excellent appendix, where the suggestions as to children's acting are both new and admirable. We would only recommend that Latin names or words be chosen for the children, rather than to latinise their own names. Thomsonius and Valkerius are not so good as Thomas and Ambulator.

Vergil, Aeneid, IX. Edited by L. D. Wainwright. viii + 128 + 40 pp. (Bell's Illustrated Classics.) 1*s.* 6*d.*—This book resembles others of the series. We have already indicated our opinion that the page is too small to be comfortably read, and the pictures interrupt the text. There is also far too much help: the English abstracts are a specially bad feature educationally, and nearly everything that might give food for thought is translated or explained. There is the usual introduction on Virgil's life and works, and the hexameter metre. A few specimens are given of English verse translations. Phayre and Twine are not mentioned, nor Gavin Douglas. The atrocious translation of Conington, so justly castigated by Henry, is praised; and that of Rhoades, by far the best of them all, only mentioned. There is a vocabulary.

English.

The King's English, Abridged for School Use. 160 pp. (Clarendon Press.) 1*s.* 6*d.*—In this edition of a book which commanded immediate attention when it was published last year, the controversial element has been diminished and the treatment of several sections has been simplified. The volume consists largely of short extracts from various periodicals and other publications selected to illustrate errors in English composition. Notes upon the faults of construction are given with each group, and directions in which improvement is possible are indicated. Some of the niceties of distinction of style described are too fine to be appreciated by ready writers, and the authors' preference for particular forms does not necessarily establish a standard of accurate diction. Carlylese may occasionally be offensive, but we should be sorry to lose the personal touch or affectation of writers whose strong individualities are reflected in their works. The literary world will present a drab appearance when all its scribes are as perfect as the authors of this book would make them. This state of perfection is without attractions for many of us; but "The King's English" lays upon the dissecting-table sufficient cases to make every student of English realise his frailties of expression, and to satisfy that type of pedagogic mind which loves to probe the faults of others. For school purposes the book would be more useful if groups of sentences were arranged as exercises for pupils to criticise, but in its present form the collection of instances, with the remarks upon vocabulary, syntax, euphony, meaning, and punctuation, should prove of real value to the teacher who desires to promote the use of correct English.

Junior English. By F. J. Rahtz. 164 pp. (Methuen.) 1*s.* 6*d.*—There is much to be grateful for in this book.

"Inductive methods have been employed wherever possible," and, we may add, excellently employed. "Simple passages from standard authors are given for study, and from these are educed the fundamental principles on which the English language is based." The author does not overstate his case; he has done what he claims to have done with rare judgment and skill. We cannot help thinking, however, that he has allowed present examination requirements to lead him sometimes along a slippery path; the chapters on parsing, errors in grammar and errors in style are, we fear, part of the burden imposed by unreflecting examiners. Is Mr. Rahtz not also a trifle vague in saying that certain chapters of his book are suitable for the *first year*? These criticisms do not affect our belief that we have here one of the best attempts we have seen to teach "junior English."

Picture Lessons in English. With fourteen full-page illustrations in colour. 33 pp. Book IV. (Black.) 6*d*.—An attempt to put into practice the idea of teaching expression from pictures. The pictures are splendid, but their excellence is largely thrown away when most of the accompanying letterpress is taken up with grammatical principles, if not with strictly formal grammar lessons. The formula, Do not say *the sun had rose* instead of *the sun had risen*, seems to us hopeless. "Write an essay on mountain climbing—its pleasures and dangers," also in the circumstances would seem, to say the least of it, a counsel of perfection.

Composition and Rhetoric. By C. S. Thomas and W. D. Howe. viii+509 pp. (Longmans.) 5*s*.—There seems to be some difference of opinion among English teachers as to the merits of English teaching in America, but there has always been unanimity as to its conscientiousness. The book before us is typically conscientious and perhaps typically illustrative of the reasons for that divergence of opinion at which we have hinted. Here we have five hundred pages devoted to an elaborate exposition of the principles underlying successful work in composition and rhetoric; and these five hundred pages, replete with a wealth of illustrative material and eloquent of inexhaustible enthusiasm and patience, are *addressed to the pupil*. He is taken over the whole ground, and at every inch his attention is directed to first principles; unity, coherence, and emphasis are explained and defined and analysed for him. We have no doubt whatever that this kind of treatment is suitable for the American child, for his training is largely based upon the underlying principles of rhetoric; but, so far as our own country is concerned, we regard the book as an extremely interesting exposition of method and as a most suitable addition to the master's library, but hardly as a manual to be placed in the hands of the pupil.

History.

The Wardens of the Northern Marches. By T. Hodgkin. 32 pp. (Murray.) 1*s*. net.—This is the lecture which Dr. Hodgkin gave in October, 1907, as the first Creighton Memorial Lecture under the auspices of the University of London. It is a clear and thorough account of the history of the border-land between England and Scotland between (*circa*) 1320 and 1603, of its wardens on both sides, the strange courts which they held, and of the failure of those courts to keep the peace. For readers of Scott especially, and for others too, it will be found interesting and useful.

School History of Oxfordshire. By H. A. Liddell. 256 pp. (Clarendon Press.) 1*s*. 6*d*. net.—Like similar histories that we have reviewed from time to time, this is a sketch of English history, with special reference to those events that happened in the county in question. Mr. Liddell has special opportunities in the story of the city and University of Oxford to make his book different to a certain extent from others, opportunities of which he has made good use, and his last two chapters are respectively on "industrial Oxfordshire" and "the Oxfordshire regiments." The latter naturally leads us far afield. There is a map as well as many good illustrations, and we recommend it heartily to all who are connected in any way with the county.

A Book of Poetry Illustrative of English History. Part II. (The Tudors and Stuarts.) By G. Dowse. vi+85 pp. (Macmillan.) 9*d*.—A most interesting and useful selection of pieces of poetry, contemporary and other, with notes, glossary, and a list of questions and subjects for essays.

Sir Richard Whittington. By W. Besant and J. Rice. 222 pp. (Chatto and Windus.)—A reprint of a book by these well-known writers, originally published in 1894. There is not much to tell about Whittington, but the authors make his life a peg on which to hang an account of London and its affairs in his time.

Nelson's School History of Great Britain and Ireland. By G. W. Prothero. 487 pp. (Nelson.) 2*s*. 6*d*.—When Dr. Prothero writes an elementary history we are sure of the facts, and here they are, compressed wonderfully into fewer than five hundred pages. It is interesting to note the proportions. We reach the end of the Tudor period in two hundred pages, and the Stuart period is dismissed in eighty more. Thus the modern history is treated more fully than the earlier; yet there is nothing important omitted, and all is clearly told. There are coloured and other illustrations from great historical paintings, a list of important dates, and the usual genealogical trees.

The Development of the European Nations, 1870–1900. By J. H. Rose. xv+619 pp. (Constable.) 7*s*. 6*d*. net.—This is a cheaper reissue of a work written three years ago. As at the very beginning of this period the European nations had defined their boundaries in Europe, it is interesting to note that Dr. Rose's chapters deal largely with extra-European questions. Thus, after six devoted to the Franco-German war and the founding of the French Republic and the German Empire, the rest of the volume is concerned, for the most part, with the Near East, the Far East, and Africa. The author confesses himself a pioneer in these matters, and warns the reader that the whole truth cannot yet be known. But the book will be useful to the teacher who wishes to give up-to-date lessons on recent world-history.

Geography.

Orographical Map of Europe. Designed by A. W. Andrews and B. B. Dickinson. Size, 62 in. × 51 in. (Macmillan.) Mounted on rollers, 15*s*.—This is an excellent map. It belongs to a type which may be said to comprise all that is best and latest in geographical teaching. No teacher of geography—or of history, too, for the matter of that—worth his salt can do without constant reference to a physical map. Messrs. Andrews and Dickinson here present him—to be sure at a price, but modest withal—with the very thing he requires. All the main features of the continent are clearly brought out—the great lowland plain of N. Europe, the highlands of the south, the shelf upon which our islands stand, the north-westerly and south-easterly slopes of the river

systems. There are scores of suggestive points for working up along with the pupils' atlases—the "submerged plain" of the Baltic, the "drowned river-valleys" of Norway, the marked proximity of low plains and a shallow sea and of high plateaus and a deep sea, the relation of mountains to rainfall, the influence of rivers and plateau-edges on trade-routes. On this last-named point the map is invaluable. Let the prospective buyer test it on the following: Marseilles and its means of access to the rest of France, the diagonal furrow of the Balkan Peninsula and its relation to the through routes from Paris to Constantinople and Saloniki, the Pyrenees and how to traverse them, the straight line of the old "Aemilian Way" of Roman times. He will be satisfied, and, being satisfied, will regard, as we do, the "fifteen shillings" as a miracle of cheapness. The most striking novelty—and we approve of it—is the introduction of yellow into the colouring of the contours. It forms the intermediary line, *i.e.*, 1,500–3,000 ft., and certainly adds clearness, without abruptness, to the different levels. Otherwise the orthodox "international" colour scheme is followed—brown and green and blue. With the map should also be purchased the "Notes"—issued by the same authors and publishers in a booklet with cloth back, thirty pages and illustrative sketch maps, at the price of 1*s*. They, too, are excellent; they give a good bird's-eye view of the physical geography of Europe, and, above all, are very strong on the "human" note—the interaction of man and his environment.

Mathematics.

A Study in Mathematical Education, including the Teaching of Arithmetic. By Benchara Branford. xii+392 pp. (Clarendon Press.) 4*s*. 6*d*.—This study should appeal with special force to teachers, as it is based on a long and varied experience of school and college work. There is no lack of treatises on education which contain a more or less intelligent appreciation of the place of mathematics and of the methods of presenting the elements of that subject to the youthful mind; but the experience of the work and of the conditions of the school which the writers bring to bear on their exposition is often too slight to enable them to test their conclusions sufficiently. Even a hasty reading of Mr. Branford's "Study" will show that he is familiar with the peculiar difficulties that the teacher of mathematics has to face; and a careful consideration of the book will throw new light on many of the obscure phases of mathematical thinking, and will, above all, stimulate every thoughtful teacher to renewed interest in his work. At the basis of the study is a high conception of the fundamental importance of mathematics as an element of human civilisation, and it is this value for general culture that makes the development of rational methods of instruction so essential. Some of the philosophical generalisations may be doubtful, but the general attitude is inspiring, and the definite suggestions put forward on details of substance and method seem to us to be often admirable. Of greatest immediate interest to teachers will, we fancy, be the numerous references to geometry and the discussions of the different aspects of proofs. Important as is the place assigned by the author to the experimental and concrete side of mathematics, it is interesting to note the statement in the preface: "It must, however, be admitted that the particular type of intellectual discipline obtainable from mathematical study on its formal, systematic, and logical side, is in considerable danger of being temporarily sacrificed during a too extreme swing of the pendulum of reform." The warning here implied cannot be neglected, but a careful study of Mr. Branford's book will go far to put the young teacher in the right attitude to the subject. The book deserves the serious consideration of everyone interested in mathematical education.

Algebra for Secondary Schools. By Charles Davison. viii+623 pp. (Cambridge University Press.) 6*s*.—The range of this text-book is roughly from the beginning of algebra to the binomial, exponential, and logarithmic series. The treatment does not strike us as being particularly fresh, and the chief value of the book lies in the exercises rather than in the exposition; these are very numerous, and afford ample practice in manipulations.

Elementary Mensuration. By W. M. Baker and A. A. Bourne. ii+144 pp. (Bell.) 1*s*. 6*d*.—This introduction to mensuration makes no preliminary demands on the pupil beyond a fair knowledge of elementary arithmetic. In the course of the work a practical acquaintance with many of the more important theorems of elementary geometry is developed, and the usual formulæ of mensuration, including some notions on surveying, are explained. The exercises are numerous.

Bookkeeping for Beginners. By Beatrice Brackenbury. vii+134 pp. (Longmans.) 1*s*. 6*d*.—The practice of bookkeeping is explained in a manner that is thoroughly suited to the needs of the beginner. No undue assumption as to the beginner's knowledge is made, and the text gives full and clear information on all matters that come within the range of the work. Numerous exercises and examination papers are provided, and contribute materially to the value of a book that seems well adapted to the needs of those who are taking up the subject for the first time.

Science and Technology.

Macmillan's Wall Pictures of Farm Animals. Varnished and unmounted, 3*s*. each. Mounted on card, bound edges and hanger, 3*s*. 6*d*. each. In unglazed dark oak frame, 5*s*. each.—The question of the improvement of the strains of our farm stock is one of the utmost importance to our country, and should seriously engage the attention not only of the breeders, but also of everyone interested in rural education. It is not always practicable to take pupils from our schools to the leading agricultural shows to let them see champion animals, but Messrs. Macmillan have provided the next best substitute in the shape of lifelike coloured pictures of representative animals of each class. With these constantly before his eyes, the pupil can be guided easily to a clear idea of what should be aimed at, and by comparing the cattle he sees around him with the almost perfect specimen depicted he can be taught to recognise the points of well-bred stock. The specimens under notice (Nos. 3 and 4 of the series) are faithful and artistic reproductions, which would beautify the walls not only of schools, but also of clubs, institutes, farmhouses, inns, &c., and be of the greatest interest and utility wherever countrymen gather together. The price is exceedingly moderate for pictures of such high merit, and the whole set of six should be found in every rural school. The publishers might bear in mind that it was as a *dairy* cow that "Sweetheart" won first prize at the Bath and West Show in 1906. She would more correctly be labelled "Beef and Milk Strain."

General Chemistry for Schools and Colleges. By Prof. Alex. Smith. xiv+530 pp. (Bell.) 6*s*. 6*d*.—All who have used the author's "Introduction to General Inorganic Chemistry" will give a hearty welcome to this more elementary text-book. It covers almost the same ground, and closely resembles the earlier work in arrange-

ment and general method of treatment; but the matter is simplified and confined to the more fundamental topics. A full account of the important non-metallic elements is followed by a briefer treatment of the metals. Details of industrial processes, and of the history of the science are as a rule avoided, but an unusually large proportion of space is devoted to the discussion of theory. Here, as in his earlier work, the author adopts a wise course. Discussions of theoretical points are postponed until experimental facts are encountered which actually demand explanation, but when once the theory has been dealt with, no opportunity is lost of applying it in immediately succeeding chapters. The result is an interweaving of fact and theory particularly valuable to younger students. In dealing with the principles of chemical equilibrium and of solution, the author is especially happy. Commendable also is the way in which he emphasises the purely pictorial and tentative nature of the Atomic Theory. One serious drawback to the usefulness of the book must be noted—the lack of illustrations. But with this exception there is no text-book of systematic and theoretical chemistry which we would sooner place in the hands of a boy in his sixth form at school or his first year at the university.

Laboratory Manual of Qualitative Analysis. By Wilhelm Segerblom. xii+136 pp. (Longmans.) 3*s.* 6*d.*—This book, a junior college course, presents so few novel features that, clear as are its tables and its notes on possible difficulties, it is difficult to see the need for its existence. It deals with the identification of the commoner elements in mixtures as well as simple salts. From an educational point of view, it makes the mistake of leaving the student little scope for original observation. The results of the practical work preliminary to each table (which the author believes should first be demonstrated by the instructor in the lecture-room) are printed in full, "so as to enable the student to devote his whole attention to the phenomena and the instructor's remarks thereon." We fear this will be more likely to lead, with the generality of students, to idleness in the lecture-room. In any case, the danger of mere mechanical following of the text, which the author foresees, is increased by the fulness of the assistance provided. The arrangement of the tables is on the whole that to which we are accustomed; but is there good reason for removing mercuric mercury, bismuth, copper, and cadmium from the hydrogen sulphide group and associating them with silver, lead, and mercurous mercury? It is pleasant to be able to direct attention to a valuable appendix containing directions for the preparation of laboratory solutions, and to the excellent printing and binding of the book.

Science in Modern Life. By Various Authors. Prepared under the editorship of Prof. J. R. Ainsworth Davis. Vol. i. xvi+188 pp. (The Gresham Publishing Co.) 6*s.* net.—In our early days we derived great pleasure, and possibly some profit also, from the popular volumes entitled "Science for All." The contributions to these volumes were of a diversified character, and represented selections from science with no thread connecting them. The present work, of which the first volume is before us, is of a more pretentious kind, and may be better adapted to the needs of the times. It will comprehend the whole realm of natural knowledge, and the various contributions will be arranged on an evolutionary scheme, from the primordial nebula up to the lord of twentieth-century civilisation and his instruments of destruction. The volume before us contains sections on astronomy by Mr. A. C. D. Crommelin and on geology by Mr. O. T. Jones. Both authors deal with their subjects concisely and with the knowledge that comes from close acquaintance with Nature. There is, perhaps, not much difference in style between the text and that of a good text-book, but the illustrations and the manner of printing at one place the volume on a different footing. When the work is completed it will constitute a valuable cyclopædia of reference, easily understood and logically arranged, to the main facts and principles of modern science. In any work of this character a certain amount of overlapping is inevitable. Thus, Mr. Crommelin describes the planetismal hypothesis on p. 55, and Mr. Jones, with less knowledge of its meaning, deals with it on p. 131. On p. 66 the old, old story of the influence of the Gulf Stream on the climate of western Europe is repeated; if Mr. Crommelin knew his meteorology so well as he knows his astronomy he would not have perpetrated this blunder. It is also somewhat parochial for him to refer to Mr. Maunder, for instance, as if his name were a household word, while a far better-known man of science is termed "the Swedish physicist Arrhenius." But everything depends upon the point of view, and men of science are apt to know greatness only in their own specialistic world. These, however, may be counted as small matters. On the whole, the work is well done, and it is very attractively produced. It is just the kind of work that should find a place in the school library. No excuse is sufficient, however, to justify the absence of an index.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The Correlation of the Teaching of Mathematics and Science.

THOSE who were present when Prof. Perry delivered the address published in your December issue must have been struck by the fact that, though many of the subsequent speeches were decidedly polemical, there was an almost universal agreement with Prof. Perry in his main contention.

Prof. Perry, who obviously does see much value in "pure" mathematics, would exclude from the schools the study of deductive geometry. On this question he did not receive much support, and it is obvious that here authorities can only agree to differ. When, however, Profs. Perry and Armstrong pleaded for more practical methods of teaching and better co-ordination of studies, they were evidently voicing the sentiments of the majority.

I will endeavour to direct attention to the difficulty of correlating mathematics and science in the junior forms at a public school. Boys entering a public school may be classified roughly as good, average, and "duffers." This classification must be explained.

(1) By "good" mathematicians I mean boys who are fairly skilful at arithmetic, algebra, and geometry, and can apply their mathematics either to arithmetical and algebraical problems, or to mechanics and physics. Such boys have correlated their mathematical and scientific work for themselves: they can give a concrete meaning to abstract mathematics and can express a concrete problem in mathematical language.

(2) By "average" mathematicians I mean boys who are fairly skilful at abstract mathematics, but cannot apply their knowledge to problems.

(3) "Duffers" are boys not included in classes (1) and (2).

I believe that the difficulties of classes (2) and (3) would vanish if mathematics were presented to boys under thirteen years of age *as a means, and not as an end in itself* at every stage; at the same time I do not believe that such a treatment of mathematics would in any way prevent clever boys from using their brains or ultimately becoming pure mathematicians who could study their subject as an end in itself. I do not believe that any amount of co-operation between mathematical and science masters will remove the difficulties of the average boy of thirteen. A boy does not begin to learn science and mathematics when he enters a public school; he has learned plenty of science before he has ever heard of a school; he has applied mathematics to science ever since he has been able to count. The problem is not how to correlate mathematics and science for boys in public schools, but how to prevent boys from learning mathematics as an abstraction only. When a *beginner* learns mathematics as an abstraction, the evil is almost irreparable, even in the case of a clever boy; but the evil can be prevented in the preparatory schools and in preparatory schools only.

I came across a boy (during his first term at a public school) who continually made mistakes in arithmetic because whenever he subtracted 8 from 13 he made the result 4. I made 13 pencil-strokes on a paper, and crossed out 8 of them; he counted the remainder as 5. I said, "Now tell me the remainder when 8 is subtracted from 13." As he could not see any connection between crossing out pencil-strokes and subtraction I made him take eight pieces of chalk from a heap of thirteen pieces. Although he counted five pieces left, he could not answer my question any better. He believed that $13-8=5$ when I told him so, but he regarded experiments with chalk as a trick which would only muddle him if he tried to understand it.

This is not an isolated case; we could all find plenty of such, if we tried. A boy usually learns mathematics as a game of manipulation of figures and symbols; it is not an interesting game, and is of little practical use except as a means of getting marks, prizes, or a scholarship. The boy makes perhaps one multiplication table for himself with counters, usually long after he has been made to learn the tables off by heart; but nearly all his work is a meaningless game of hunting answers to sums which he only knows to be right because his answer agrees with the answer at the end of the book.

When a boy begins equations in algebra, instead of learning equations as a means of solving puzzles and problems, he is shown one equation on the board, and works out thirty others like it, according to rule. Later he is shown how to verify equations, and then he is expected to apply his equations to problems. He fails. He has so far succeeded in learning abstract mathematics that to apply these mathematics to a problem is a further abstraction. Such a boy cannot apply his algebra to a simple problem about the price of pocket knives, still less to mechanics or physics. He soon loses any skill in algebraical manipulation if he is allowed to get out of practice; he sees no obvious absurdity in such a statement as $10\frac{1}{6} \times 1\frac{1}{2} = 12000\frac{1}{2}\frac{1}{6}$.

In striking contrast to such a case is the boy who has learned mathematics at each stage as a concrete subject, or who, while learning mathematics as an abstract subject, has succeeded in making it (mentally) a concrete one. This latter boy has little difficulty with algebraical manipulation because he is always experimenting with x, y, $+$, $-$, &c., for himself; if he has forgotten which of the following statements is correct, $a(b+c)=ab+ac$ or $a(b+c)=ab+c$, he soon discovers the right one by substituting numbers for a, b, and c. Later he has no difficulty in understanding the mathematics of calorimetry or statical electricity.

Prof. Perry would find his ideals far more easily realisable if he could get his methods accepted in preparatory schools. I do not wish to make any attack on preparatory-school masters; they send up to the public schools plenty of capable mathematicians, but they fail with the average boy (as defined above), not through inability or slackness, but because they are tied down to the present system. It does not seem that public-school masters can help Prof. Perry much, except through the public-school entrance examination and the text-books.

Teachers are not prepared to wait for the operation of Prof. Perry's reforms, namely, doubling of salaries and halving of forms. The important question is: What can be done under present conditions to prevent boys from learning mathematics as a series of abstractions? Many things can be done, of which some are suggested.

(1) Text-book reform. (The following suggestions refer to text-books for beginners *only*.) (*a*) Simplification of language. The terms used in text-books should be correlated with the terms used by a boy in his daily life. Geometrical terms are unfortunately stereotyped, but algebraical terms can be changed easily. A question like the following—"Express symbolically the fact that the excess of m over n is p times the defect of q from r"—is hopelessly confusing to a boy who never uses the terms "excess" or "defect." (*b*) Definite directions (not mere suggestions) should be given for the use of concrete objects to explain the first four rules of arithmetic. (*c*) At every stage concrete problems should come first, and 70 per cent. of the examples should consist of them. (*d*) In algebra where suggestion (*c*) is difficult to carry out, the method should be as heuristic as possible; *e.g.*, the chapter on factors should commence with the formation of easy products. (*e*) In geometry, theorems should be introduced as late as possible; the beginner should use only books like Hall and Stevens's "Lessons in Experimental and Practical Geometry." (*f*) Explanations of method and worked examples in arithmetic and algebra should only appear in the teacher's text-book. (*g*) Every text-book should contain a large collection of *easy* problems, not grouped according to type.

(2) Reform in the public-school entrance examination. (*a*) In arithmetic and algebra let 70 per cent. of the marks be given for simple problems, and 30 per cent. for questions requiring only skilful manipulation of figures. (*b*) In geometry let 80 per cent. of the marks be given for questions which a boy who has worked at practical geometry could answer, and 20 per cent. for theorems.

I think I understand Prof. Perry's ideals, and, while I do not suppose any such reforms as are suggested above will remotely approach his ideal, I claim that such reforms are much needed and would be acceptable to Prof. Perry. For fear of being misunderstood, I repeat that I do not attack any text-book now used in a public school; I only question the value of some of them in preparatory schools: I make no attack on the preparatory-school master, who is only the victim of a system from which he would, I believe, gladly escape. EX-PREPARATORY-SCHOOL MASTER.

I HAVE hopes that when the discussion is published critics will see less objection to adopting my views. It was a healthy discussion, and the kindliness which the speakers exhibited towards each other, and especially to me, was very marked and promising. Each of them, with few exceptions, tried to see the situation through other eyes as well as through his own.

It is not often that I get so much satisfaction as I have through your correspondent's letter, not only because

in general he seems to sympathise with Prof. Armstrong and myself, but because he dwells upon the harm that is done to the young boy who is capable of abstract reasoning by encouraging an undue development of that power. I referred to this in my Glasgow address as regards very clever boys, but I did not then see the point so clearly as I do now after reading the above letter: "The problem is . . . how to prevent boys from learning mathematics as an abstraction"; and he gives illustrations of the danger.

Any person who has taught children can now give many other illustrations. Think of the fearful courses of study on psychology and pedagogy in our training colleges, and how the lecturers and pupils remain ignorant of such an important simple fact as this! It is most important to show that our methods not only give the best education to the average boy (or rather to 98 per cent. of all boys, for I think that only 1 per cent. are duffers), but that they are the best also for the 1 per cent. who are capable of abstract reasoning.

Your correspondent's suggestions for improving the teaching in preparatory schools seem to both Prof. Armstrong and myself admirable.

JOHN PERRY.

Phonetics in Music and Modern Languages.

THOUGH most secondary schools have now adopted the reformed methods of modern language teaching, many teachers hesitate to make use of the science of phonetics as an aid to a more correct and intelligent pronunciation of the foreign tongue.

The progressive and enthusiastic teacher is apt to reflect on the already overcrowded curriculum, and the consequent small proportion of time which is allotted to his French or German. To give up some of these precious hours to a study of phonetics, or to add yet another "subject" to the time-table, almost brings feelings of despair—and of revolt.

Now most teachers of experience agree that the mere imitation of foreign (or even of English) sounds does not bring the results desired. Prof. Rippmann and other enthusiastic phoneticians assure us, however, that a careful study of phonetics not only leads to a correct and intelligent pronunciation of the foreign language, but is also of great use and value in dealing with the sounds occurring in the mother tongue.

It seems to me that the solution of the difficulty lies largely with the music master. In teaching music to children, the first and essential aim is to secure a pure tone, and this is only attained by the use of suitable vowel sounds, which, of course, must be sung with the utmost care and correctness.

Why should we not accustom the children to the sounds and symbols used in phonetics by adopting these in the music lessons? It is always necessary to direct attention to the correct method of producing each sound and to the right position of the tongue, lips, teeth, &c., when scholars are singing; and this careful work is just what is needed when studying phonetics. To give an example. The best vocalising vowels for the production of good "tone" in singing are: (1) "ah," as in "father"; (2) "e," as in "bet"; (3) "i," as in "bit"; (4) "oo," as in "brood"; (5) "o," as in "road"; (6) "aw," as in "broad"; and (7) "o," as in "hot."

The corresponding phonetic symbols for these sounds are: (1) "ɑ:," (2) "e," (3) "ɪ," (4) "u:," (5) "o," (6) "ɔ:," and (7) "ɔ."

Instead of adopting the usual sign "ah" for the "a" in "father," the phonetic symbol "ɑ:" will be used, and so on with the other vowels. If these are introduced gradually, and from the very beginning of the music course, the pupils will have no difficulty at all in remembering both the symbols and the correct sounds which they represent.

In a precisely similar way the diphthongal sound in a word like "night" will be written "ai," the "u" in "music" as "iu," the "ow" in "now" as "au," the "oy" in "boy" as "ɔ:i," the "a" in "save," "paid," as "ei." (This is most helpful in London, particularly with words like "save" and "night," which are generally pronounced badly.)

In my own school (as in many others) we give about five minutes each morning to vocal exercises, immediately after assembly. This helps the singing and "tone," is good physically, and it is surprising what an amount of useful work can be got through in the course of a year by giving this small amount of time each morning to vocal practice. It is here that the phonetic symbols and sounds should be introduced, and I feel sure that the familiarity which scholars will thus gain with them will very much lessen the teacher's work in the class-room when the phonetic signs are applied to the foreign or mother tongue.

It is needless to add that the music-teacher must be thoroughly competent—not a visiting master who is a musician only—and, if possible, a teacher of modern languages himself.

Those teachers of singing who are familiar with Mr. Bates's recent work, "Voice Culture for Children" (which is, in my opinion, the best practical manual for the training of the child voice), will realise how easily the phonetic system could be applied in working through the book, in place of the arbitrary signs which Mr. Bates uses.

As a matter of fact, the principle advocated in this letter is adopted by the author; for in order to ensure that words are correctly vocalised when sung, he transcribes (as an example) the first line of "Robin Adair" thus:

"What's this dull town to me? Robin's not near."
Hoo-ôt's thîs dûll tahoon too mî? Rôbîn's nôt nîr.

Which would, of course, be phonetised:

ʍuɔts ðis dʌl tɑ:un tu: mɛ? rɔbins nɔt ni:r.

Here, in the latter case, instead of using arbitrary signs, which are of little permanent use when learnt, we are using symbols for standard sounds, as adopted by the Association phonétique internationale.

This not only ensures pure vocalisation from the musical point of view, but is also a great aid in obtaining correct pronunciation of language, and more than "breaks the back" of the phonetics work.

Moreover, we have effected an economy in teaching, which surely is something to be aimed at in these days of too crowded time-tables and over-pressure.

JOHN MILES.

Hornsey County School, Harringay, N.

An Experimental Test of Observational Powers.

IN the teaching of elementary science or nature-study to pupils who are quite at the beginning of their school course, the principal object in view is the development of the powers of observation, and, secondarily, the power of recording the observations in clear and correct English. The following summary of the results of an experiment the object of which was to discover to what extent this training of observation had been carried out in the three lowest forms of this school will probably interest teachers.

The experiment does not make any pretence to psychological exactitude. Psychologically, observation is a complex process in which a number of simpler, separately measurable processes are going on at the same time, the final result in any case being a more or less simple judgment. In the case of the experiment under discussion only the final results were dealt with, the various stages by which they were obtained being for the time ignored.

The difficulty which arises in conducting such a test lies in the selection of material. Obviously, the test loses in value if some pupils are already familiar with the object to be observed. At the same time, it is important to excite interest, and this is perhaps best secured by presenting an object which *moves*. A chameleon was selected as the most suitable object, and happened to be quite unknown to all the pupils.

The animal was placed on a large branch in front of the class, and the pupils were allowed to come up, two at a time, and examine it closely. They were asked to write down in a series of brief statements all the observations they had made, so far as possible making each statement include one fact alone. In this way differences arising merely from good and bad composition were practically eliminated. Great care was taken to prevent the boys from comparing their observations or communicating in any way with each other. A vast mass of quite unimportant details were, of course, noted down, from which the points recorded in the subjoined table are selected.

It will be noticed that no number is recorded in column 3, nor, of course, in column 4, opposite observations 10 and 11. The reason for this omission is that the two particular observations of colour change in question are not easily made unless the creature is at the time in bright sunlight. Owing to the precaution of making all the observations in rapid succession, so as to prevent communication of results, the sunlight had diminished considerably before Form III. had completed their observations.

A further note is necessary in reference to observations 16 and 17. We have here an example of the difficulty of completely eliminating the consequences due to differences in power of expression. Quite clearly the same structure might be described by one person as a small aperture to the eye, and by another as a perforated eyelid, while a third might record it first as a small aperture, and add, in explanation, that it looked like a perforated eyelid. In order to allow for this as fully as possible, any paper bearing the statement that there was a perforated eyelid was counted as having also recorded that the eye has a small aperture, unless the latter fact is also explicitly stated.

Nearly every paper handed in contained an estimate of the length of the animal. These results are interesting, but are not referred to here, since the estimation of length is a complex subject in itself, and one on which material is still being collected.

Ranging the results in order of popularity, we find that the first place is taken by No. 18, viz., "legs, 4 in number," while No. 16, viz., "small aperture to eyes," stands second. Following in close succession, we find observations on the use of the tail in climbing (No. 3), the colour of the animal (No. 8), and the comb-like ridge down the back (No. 12). This seems to indicate that the first necessity of disciplined observation has been acquired, viz., to record, first, those things which are most obvious and not those which are most unusual.

No. 5—"independent movement of eyes"—and No. 21—"the peculiar arrangement of the toes"—are no doubt among the best tests of the power of accurate observation, since both are perfectly definite points capable of easy statement in unambiguous language.

Table of Results of Observations on the Chameleon.

	Form I.	Form II.	Form III.	Total
No. of boys in the Form	17	21	34	72
Average age of the Form	11 y. 2 m.	12 y. 6m.	13 y.	
Observation made	Number who made observation.			
Habits:				
1. The animal climbs to the top of the bough it is on	0	3	0	3
2. Uses hands and feet in climbing	8	3	14	25
3. Uses tail in climbing	6	13	26	45
4. Eyes very mobile	5	2	21	28
5. Eyes move independently	3	4	7	14
Skin:				
6. Rough	8	5	17	30
7. Scales present	2	3	8	13
Colour:				
8. Green with brown spots	9	9	28	46
9. Colour changes	2	7	4	13
10. Colour changes with surroundings	1	1	—	—
11. Darker one side than the other	0	5	—	—
Shape of body:				
12. Ridge along back with teeth upon it	9	11	26	46
Head:				
13. Has conical backward projection	4	3	12	19
14. Nostrils present	4	8	12	24
Eyes:				
15. Ball-shaped	5	16	24	45
16. Have small aperture	8	14	25	47
17. Have perforated eyelid	6	6	11	23
Legs:				
18. 4 in number	14	16	25	57
19. Each foot has 5 toes	3	1	14	18
20. Toes in 2 groups, 3 in one and 2 in the other	6	4	12	22
21. Forefoot 2 toes inside, 3 toes on outside. Hind foot *vice versa*	0	2	0	2
Total, omitting Nos. 10 and 11	102	130	288	—
Average points observed by each boy	6·0	6·2	8·5	—

In conclusion, it is interesting to compare the increase in the average number of points scored by each boy as we pass from one form to the next. In passing from Form I. to Form II., the average age increases by sixteen months; from Form II. to Form III., by six months. It is therefore not a little surprising to find that the average score of Form II. is 0·2 above that of Form I., whereas Form III. is no less than 2·3 above Form II. It is quite

impossible with such a limited range of data as the present to arrive at any conclusion as to the reason of this, but it may quite possibly be due to the fact that the boys in Form III. have begun courses of elementary chemistry and physics on observational lines. It is without doubt also affected by the fact that a certain varying proportion of the boys in each of the higher forms has not passed through the lower.

J. A. DELL.

Sexey's School, Bruton.

A New Form of Boyle's Law Apparatus and a Simplified Constant-Volume Air Thermometer.

THE principles involved in Boyle's law and the constant-volume air thermometer are of such fundamental importance as to render an investigation of the experimental facts upon which they are based a desirable study for beginners in physical science.

The following forms of apparatus have been devised with the object of facilitating the practical acquaintance of elementary students with the phenomena concerned.

The chief feature of the device is the means whereby the difference of pressure is obtained. The "Boyle's law" apparatus consists of two capillary tubes of glass about 2 mm. diameter in the bore, one of them about 80 cm. long and open at both ends, the other about 50 cm. in length and sealed at the upper extremity. A length of about 2 cm. at the lower end of each is bent at right angles to the remainder. To each of these bent parts is wired one end of a piece of indiarubber tube about 18 cm. long and of 5 mm. internal diameter. The two tubes are fixed side by side in a vertical position on a varnished paper scale, which is pasted on an upright board. This board is supported on a base of cast iron, which takes the form of a small rectangular tray upon which rest the bent ends of the glass tubes, and between these the rubber tube lies as a connecting loop.

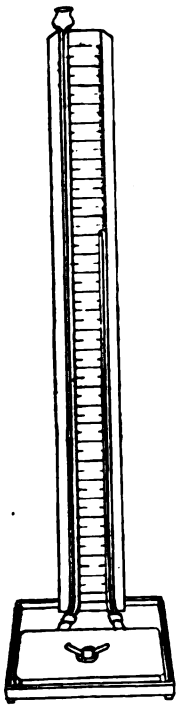

FIG. 1.

Mercury is introduced so as to fill the rubber tube and to rise to a height of about 25 cm. above the base in the closed limb and about 5 cm. in the open one.

Fitting into the tray, and resting on the rubber loop, is a small, flat piece of wood through which a winged screw passes into the base, and by means of this screw the board can be made to squeeze the rubber tube so that the mercury is pushed up the open tube to any desired height, and the air in the closed limb is subjected to an increase of pressure which can be measured with accuracy on the scale.

Care is required in selecting the glass tube to secure for the closed arm a piece of uniform bore. This can easily be done by calibration with mercury in the usual way. It is also desirable to use a piece of the same tube for the other limb, so as to obviate errors due to capillarity.

To prevent loss of mercury by careless handling, the upper end of the open tube is shaped like a thistle funnel, while the base itself is a mercury tray.

Three studs on the base prevent the squeezing board from being screwed down so tightly as to close the bore of the rubber tube.

The introduction of the mercury is easily accomplished if an air-pump with a tall receiver is available; or a large glass tube closed at one end and attached at the other to a "filter pump" will serve the purpose. The filling may be done before the indiarubber is wired on to the closed limb.

The point at the top of the closed limb from which the length of the enclosed air column is measured can be ascertained by measuring the length of a plug of mercury, first a little way from the end and then when shaken right up into the conical termination of the bore. This should, of course, be done before the apparatus is put together; but unless extreme accuracy is required in the experiment the operation is not necessary.

The apparatus can easily be made by anyone accustomed to physical manipulations. The base may be of wood, and the pressure screw may be an ordinary brass wood-screw with a cross-bar soldered across the top. The cost is small and very little mercury is required. The accuracy attainable in measurement is such that the error of Boyle's law, in the case of carbon dioxide, could easily be shown by a competent observer, whereas the ordinary elementary student can make a series of observations giving values for the product PV which do not differ by more than about a half per cent. The general arrangement is illustrated in the diagram.

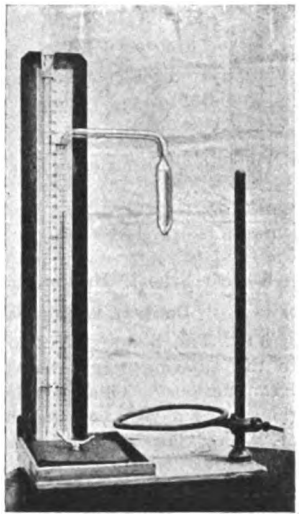

FIG. 2.

The constant-volume air thermometer is made on the same principle, and if the mercury is arranged so that the pressure in the tube at 0° C. is about 55 or 60 cm. of mercury, the whole apparatus is very compact and easy to manipulate.

G. A. SHAKESPEAR.

The University, Birmingham.

Volumetric Combination of Hydrogen and Oxygen.

AN unorthodox method of making this experiment leads to such useful results that I have found it valuable in my chemistry course.

I use the straight-tube form of eudiometer, with water as the liquid instead of mercury.

The volumes of gas concerned being small, corrections for differences of pressure, which are always imperfectly appreciated by the young student, are neglected, and the result is calculated directly from the readings taken, so that an experiment is quickly made. If the volume of oxygen in the mixture be not allowed to exceed three graduations of the instrument, there is no risk of danger.

The following results of three experiments recently made in the laboratory are sufficiently good to form the basis of subsequent reasoning:

(i) Volume of H passed in = 11 volumes.
Volume of mixed H and O = 13·2 volumes.
Volume of residual gas (H) = 6·55 volumes.

This leads to the result: 4·45 volumes of H combine with 2·2 volumes of O.

(ii) 3·3 volumes of H combine with 1·7 volumes of O.

(iii) 4·1 volumes of H combine with 2·1 volumes of O.

Wm. T. Clarke.

The Secondary School, Heanor.

Coefficient of Apparent Expansion of a Liquid.

A method of obtaining the formula for the coefficient of apparent expansion of a liquid, when a weight thermometer, dilatometer, or pyknometer is used, may be of interest.

Let o° C. be the initial temperature at which the thermometer is full of the liquid, and t° C. be the final temperature at which the thermometer is full of the liquid.

Then suppose the mass of liquid left in the instrument at t° C. be cooled to o° C., and its volume then to be V.

The liquid expelled would, if cooled to o° C. and replaced in the thermometer, fill the remaining space v.

Then volume V for a rise of t° C. expands by v

$\therefore$ 1 ,, ,, ,, 1° C. ,, ,, $\frac{1}{t} \times \frac{v}{V}$

$\therefore$ Coefficient of apparent expansion of liquid $= \frac{1}{t} \times \frac{v}{V}$

$= \frac{1}{\text{rise in temperature}} \times \frac{\text{weight expelled}}{\text{weight left in at the higher temperature}}$

W. M. Carey.

Rutlish School, Merton, S.W.

Central Welsh Board Examinations.

Will The School World allow me to direct attention to the amazing Regulations of the Central Welsh Board Examinations? This body holds a kind of local examination, once a year, of the ninety-five intermediate schools of Wales, but its ideas of school work and possibilities differ very widely from those of the authorities of the Oxford or Cambridge Local Examinations.

(1) Many complaints have been made for years past (utterly disregarded by the bureaucratic authorities of Cardiff) as to the unreasonable standard set in the French Honours stage. One examiner's report states with fatuous complacency that the standard is in some cases equivalent to that of the Modern Language Tripos at Cambridge! Ought a school examination of boys and girls, who have come from elementary schools and had four years at a secondary school, to be anything of the sort?

(2) In modern history the case is far worse. The Regulations for the Honours stage prescribe (i) the whole history of England and Wales, including political, constitutional, economic, and literary history; (ii) the history of Greece (B.C. 509–362) and Rome (B.C. 218–44); (iii) the mediæval and modern history of Europe, 900–1422 and 1493–1815. Until about a fortnight ago no dates or periods at all were specified! Even this modified syllabus represents an inordinate amount of work for boys and girls under eighteen, who have other subjects to take as well.

William Modlen.

Abergele.

"Absurda Comica oder Herr Peter Squenz."

The writer of the review in the December issue of my recent edition of Gryphius's "Herr Peter Squenz" shows himself to be a critic of no slight conscientiousness, since he admits having annotated it "on every page." Nevertheless, three of his contentions cannot be allowed to pass. (1) Throughout the book he found words which, in his opinion, "required a note; the editor evidently thought otherwise." He certainly did; and if once your reviewer were to be made aware of the precision with which the average schoolboy detects words which "require a note," he would be able to understand the aversion of those daily engaged in modern language work on purely conversational lines for any notes whatsoever which trench on the domain of the dictionary, the grammar, or the ordinary explanations of the teacher himself. (2) The "Absurda Comica" is "calculated to harm a pupil's vocabulary." Class experience with the book proves the exact contrary. The text is so interesting that those using it *will* know the meaning of all words in it, and it is needless to explain to any teacher how much more lasting is a vocabulary acquired willingly than one acquired perfunctorily. (3) His main objection, however, that this is the "unhappiest of all unhappy inspirations in the choice of books for school reading," shows your critic to be poles apart from modern opinion on texts for school reading. In twelve years' experience of modern language teaching, and with texts ranging from "Iphigenie" to "Max und Moritz," and from "Leberecht Hühnchen" to "Der arme Heinrich," the present writer has not yet found any book which brought such unfeigned delight to his scholars and exercised such indisputable attraction upon them as did Gryphius's "Herr Peter Squenz." No matter how the spectators may scoff, the schoolboy is, with regard to most questions of progressive educational theory, the final court of appeal. Let his interest be gained, as has been found to be the case over and over again with "Squenz," and three-fifths of the battle is won without a blow.

Sydney H. Moore.

I must content myself with a summary reply bearing on the three contentions which "cannot be allowed to pass": (1) Much obsolete German in the text has not been annotated, the explanation of which is not to be found in ordinary dictionaries and grammars, and would give trouble to many teachers. (2) The large proportion of Latinisms and archaic words is a serious disadvantage; there is no gain in becoming familiar with such words as *rotzig* (translated "mucous"!), *Lehmweller, den Narren fressen, Vergnügung, annehmlich, erlustigen.* (3) It is my deliberate opinion, based on a longer and more varied experience than Mr. Moore's, that the book is quite unsuitable for school use. In a question of this kind I do not recognise the competence of the schoolboy as a "final court of appeal." The Reviewer.

The School World.

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The School World

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THE EDUCATION (SCOTLAND) ACT.

THE Education (Scotland) Act, which became operative on January 1st last, has been so much criticised for certain sins of omission that its enlightened and far-reaching provisions in many directions have been largely ignored. Yet it is not too much to affirm that this Act is the greatest educational measure since the inauguration of compulsory education by the Act of 1872. Indeed, it need not even yield pride of place to that measure, which conceived of education in the narrowest and most limited sense. It is true it provided educational opportunities for the children of all classes in the community, but by laying stress on the acquisition of knowledge rather than on the training of intelligence it gave a fatal bias to the education of a whole generation.

The new Act may fairly be said to represent the most enlightened educational views of the day. It has regard to the whole well-being of the child, and not merely to his intellectual equipment. It lays it down as among the first duties of the education authorities to provide food for school children unable through lack of proper nourishment to profit by the education offered. Parents habitually sending their children to school in an unclean condition or insufficiently clad will be held guilty of wilful neglect, and prosecuted under the terms of the Prevention of Cruelty to Children Act, and the cost of rendering the child fit to receive instruction may be recovered from the parents. Medical examination of school pupils has already been instituted by some of the more progressive school boards in Scotland, but now it is to be required of them as a duty, the State contributing half of the cost. Special provision is also made for the care of physically and mentally defective children, and school authorities are empowered to require the parents of such children to provide education for them up to the age of sixteen years. In view of these and similar clauses, the new Education Act may fairly claim to be what the Lord Advocate called it, "the charter of the school child's rights."

SCHOOL ATTENDANCE.—A gradual but steady improvement with regard to regular attendance has taken place during recent years, yet the latest statistics show that no fewer than two out of every fifteen children on the roll of primary schools are absent each time the schools of Scotland are open. After making due allowance for those absent for satisfactory reasons, there remains a considerable percentage of absentees for whom no excuse can be found save the carelessness or selfishness of the parents. The cumbrous and costly procedure for dealing with such offenders has hitherto gravely restricted the working of the compulsory attendance clauses, but a remarkable forward step has been made by one of the provisions of the new Act. If a school board finds that a parent is failing to secure the regular attendance of his child at school, it is empowered to issue an attendance order requiring the regular attendance of such child at school, and failure to obey the order will be visited with all the pains and penalties laid down in the former Act. Given constant vigilance and sustained effort on the part of school managers, it should be possible to report a notable advance in the regularity of school attendance within the next few years.

COMPULSORY CONTINUATION CLASSES.—The problem of extended compulsory education by means of continuation classes is increasingly pressing itself upon us. Both on educational and social grounds this is inevitable. Much of the time and money now being spent on elementary education is practically wasted owing to the early age at which pupils leave school. They pass from school to the streets before the education they have received has become a living integral part of themselves, and in a few years, save for some dexterity in the mechanical parts of reading, writing, and arithmetic, there is left not a wrack behind. There is thus no return to the nation in the shape of an increased efficiency of its citizens for all the millions that have been spent. But it is on the social side that the strongest reasons can be advanced for the extended education and supervision of the young. Under existing conditions boys and girls at the critical period of life pass from the discipline and care of recognised authority to the streets. In their most impressionable and plastic years they are left largely to themselves, and what wonder that many of them make hopeless shipwreck of their lives. Their richer brothers and sisters of the same age,

on the other hand, are surrounded by every possible influence to train them to that which is good, and to shield them from that which is evil. Even then there is always a percentage who go astray, but they have at least had a chance; and it is time something was being done to shield the poor of our great cities from the terrible temptations which surround them. Prof. Sadler, in his recent volume on "Continuation Schools in England and Elsewhere," has put the case for extended education with unanswerable force, and perhaps some day, when the war of sects has ceased, time will be found to deal with the problem. Meanwhile, Scotland in the new Act has boldly grappled with the question.

It shall be the duty of a school board to make suitable provision of continuation classes for the further instruction of young persons above the age of fourteen years with reference to the crafts and industries practised in the district, or to such crafts and industries as the school board may select, and also for their instruction in the English language and literature.

On the representation of not fewer than ten ratepayers, the Department may call upon a school board, persistently neglecting its duty under the above section, to institute continuation classes or submit to a serious reduction of the ordinary grants. The section in question not only makes the setting up of continuation classes compulsory; it also and very wisely prescribes what is to be the nature of that education. If it were to be a continuation of the bookish knowledge of the schools, we should only be helping to produce in greater numbers what the Kaiser has called the *Abiturienten Proletariat*, the leaving certificate mob. The clause, however, definitely settles that the education given shall be largely industrial, and modelled apparently on the curriculum of the trade schools of Germany and the United States.

But it is not enough to provide the facilities for education. Something more is required. As Prof. Sadler has pointed out, boys and girls of the poorer class cannot be expected to see by their own unaided intelligence the necessity for continuing and revising their previous knowledge. They come from homes that have no hereditary respect for learning and but little foresight even in worldly matters. Both the fact of the facilities and the urgent need for taking advantage of them require to be brought home to those concerned. Hence the new Act looks to school authorities encouraging by every means in their power, and, if necessary, enforcing attendance at such classes.

It shall be lawful for a school board from time to time to make bye-laws requiring the attendance at continuation classes up to *seventeen* years (or such other age, not exceeding seventeen, as may be specified in the bye-laws) of young persons above the age of fourteen not otherwise receiving suitable education.

It has been made the ground of complaint against the Government that it has left it to the discretion of school boards to decide for or against compulsory attendance at continuation classes. But it should be remembered that even the principle of local option in regard to compulsory continuation classes marks an enormous step forward, and only experience can tell whether the public are prepared for so radical a change. There can be no doubt whatever that they would not at present tolerate a measure setting up a system of universal continuation school training up to seventeen years of age. The question of extended school life is intimately bound up with the whole industrial system. It will be generally agreed that children cannot be forced to attend evening schools after working for seven or eight hours at their daily employment. Compulsory evening school attendance has as its necessary corollary a new Factory Act limiting the hours of work (school hours and work hours combined) for all under seventeen years of age, and compelling employers to grant facilities for continuation school attendance. Clause 10, subsection 4, of the present Act practically secures that this will be done wherever boards take advantage of the compulsory powers vested in them. It is to be hoped, however, that school boards will approach the question of compulsory continuation schools with extreme caution. A premature advance now might set back the whole scheme for a generation. The sympathy, the help, and the advice of employers should first be secured, as well as the co-operation of all in touch with industrial work and workers, and in particular the trade union leaders. Only in this way can a strong body of public opinion be created which will admit of a fresh advance.

The Act also provides that bye-laws may be made requiring all persons within the district having in regular employment any young person under seventeen years of age to notify the same to the school board, with particulars as to the hours during which such young person is employed. Employers disregarding this demand, or failing to give facilities to the young persons in their employment to attend continuation classes at the specified period, or working such employees for a number of hours which, when added to the required number of hours of continuation class instruction, exceeds the maximum laid down by Act of Parliament, shall be liable to a penalty not exceeding twenty shillings for a first offence, and not exceeding four pounds for any subsequent offence. These wise provisions rightly place upon employers the onus of making, or at least facilitating the making of, arrangements for the further instruction of their young persons. At present the conditions of employment make it practically impossible for a large number of boys and girls to attend evening classes, while of those who attend many are too fatigued to derive any real benefit from their presence at them.

EMPLOYMENT BUREAUX.—The problem of making provision for the army of boys and girls between the end of the compulsory school period and the age of sixteen or seventeen, when the skilled trades are prepared to take them, is an exceedingly difficult one. Our modern industrial

arrangements too often present alluring prospects for the young for a year or two, but offer absolutely no future. Certain forms of industry, as Prof. Sadler has pointed out, are largely parasitic in character, and get more of the physical and mental capital of the young than they are entitled to. They absorb young employees for a year or two, and then cast them aside and bring in another set in the same way to do the work. It is these parasitic industries which are in large measure responsible for recruiting the ranks of casual labour, and it is in the ranks of casual labour that the great mass of our unemployed are to be found. If something could be done to divert the young from these occupations it would be striking at one, at least, of the many causes of unemployment. Probably no better way of doing so could be found than that provided for in the new measure, whereby school boards are empowered to set up Employment Bureaux for the purpose of collecting and distributing information as to employment open to children on leaving school, and the conditions of service and the ultimate prospects in each.

TEACHERS' TENURE OF OFFICE.—While the Act, as has been shown, is essentially a children's measure, the personal interests of the teachers have not been overlooked. One of the clauses may be said to go some way towards restoring to teachers the reasonably secure tenure of office that was taken from them by the Act of 1872. In future a teacher under notice of dismissal will have the right of appeal to the Department, which may make such inquiry into all the circumstances of the case as it sees fit. If, as the result of such inquiry, it is found that the dismissal is not reasonably justifiable, the school managers will be asked to reconsider their notice of dismissal. If they fail to do so, the Department may call upon them to pay to the teacher in question a sum not exceeding one year's salary. These two safeguards of official inquiry and possible compensation do not give teachers the tenure of office of medical officers, who are not "removable from office except by or with the sanction of the Local Government Board." But they go a long way towards making the position of the teacher much more secure and independent than it has been since 1872, for even the most tyrannical of boards will hesitate to run the risk of being mulct of a year's salary unless it has valid grounds for the dismissal of a teacher. It is safe to say that "teacher-baiting" will no longer be so popular a pastime with small school boards as it has been in the past.

SUPERANNUATION OF TEACHERS.—Nothing has done more to bring the teaching profession into disrepute with the most highly gifted of our youth than the miserable doles that have been paid out under the terms of the Superannuation Act to teachers who had spent a lifetime in the service of the State. That Act was framed on the basis that superannuation was an eleemosynary allowance to secure individuals from want. The allowances consequently had no relation to salaries, and did not, in the case of the older teachers at least, reach the standard of a living wage. The new Act proposes to cut Scottish teachers adrift from that utterly inadequate measure, and to found a new pension scheme on the basis laid down by the recent Commission on Civil Service pensions that superannuation allowances should be on such a scale as to maintain the individuals affected in the social position they had reached by their previous good conduct. The exact terms of the scheme can only be determined after careful actuarial examination, but the broad principles have been determined as follows:

(1) The Scottish Teachers' Superannuation Fund shall be administered by the Department, and shall be made up by (*a*) deducting from the grants payable to school authorities a sum not exceeding six per cent. per annum of the salaries of the teachers to whom the scheme applies; (*b*) an additional sum from the Education (Scotland) Fund (the amount to be prescribed in the scheme); (*c*) a sum from the Treasury equivalent to, or in commutation of, payments now being made under the Teachers' Superannuation Act, 1898.

(2) All teachers engaged in elementary, secondary, or technical schools receiving grants from the Department will be eligible.

(3) Such teachers may be called upon to refund to the school authorities a sum not exceeding four per cent. per annum of their salaries in consideration of the aforesaid deduction by the Department.

(4) The pension allowances will be based on Civil Service principles—a prescribed proportion of salary for each completed year of service.

(5) The pension scheme will be on a *money returnable* basis.

The sum that may be required from the teacher, four per cent. per annum, is a fairly heavy contribution, but this fact has strongly commended the scheme to school authorities and the general public, and has enabled the many clauses bearing on the subject to go through Parliament with hardly a word of discussion. It is particularly satisfactory to find the claims of secondary-school teachers to a reasonable pension scheme so completely recognised. English teachers, both in primary and secondary schools, may well look with envious eyes on the prospects of their fellow-workers across the border. They, however, may be trusted to make the most of the precedents established by the Scottish Act, and to insist upon a radical amendment and extension of their own Superannuation Act. As the pension scheme cannot be instituted for a considerable time, the framers of the Act, with a consideration and forethought highly honourable to them, have made provision whereby school authorities may grant supplementary pensions to retiring teachers who accepted the existing Superannuation Act, and half the amount of such allowances will be refunded to them from the Education (Scotland) Fund. They are also empowered to augment the "miserable pittances" of teachers who have already retired, and will have half of this charge also returned to them. Altogether Scottish teachers have good cause to be thankful that they have an enlightened

and sympathetic autocrat at the head of their educational system.

It will take a considerable time before all the machinery provided by the new Act can be got into thorough working order, and it cannot be too much insisted on that slow and cautious action will prove the surest way of attaining ultimate success. But when all the provisions become fully operative, it may with confidence be affirmed that no country in the world will be better equipped than Scotland for dealing successfully with the complex educational problems that lie at the root of our economic and social conditions.

THE AFTERMATH OF MEDICAL INSPECTION.

IT has always been recognised that the medical inspection of school children was but a necessary means to a desirable and not less necessary end; that it was the only method by which to gauge the physical quality of a most important part of the nation's educative material; and that it would be merely a wasteful farce if it were not supplemented by appropriate action directed towards making good the weak points which it might reveal, and preventing, or at least mitigating, the deleterious causes which are responsible for their development. It is obviously only a stupid waste of money and of energy to attempt to teach children who are too ill, too blind, or too poorly fed and clothed to learn; and few would deny that it would be real economy to remove such practical impediments to learning, if this can be done by means of systematic measures, carefully devised and supervised, and safeguarded so far as is humanly possible from abuse. The public has already learned something of the needs revealed and of the remedies called for, from the steps which have been forced upon more than one of the great educational centres in the provinces; it has been told what is being accomplished to this end by Germany and other Continental nations; and now recent reports of the Education Committee of the London County Council serve to throw further light upon the needs existing in our own metropolis and of the responsibilities which these entail.

The extent and gravity of these needs are indicated clearly by the evidence collected by the special subcommittee appointed to consider the question of the medical treatment of children, and the means by which this might be adequately secured. It seems that no less than 90 per cent. of the children attending the Council's schools stand in urgent need of dental treatment. And while it is probably true that, "if dental hygiene were taught and cleanliness could be enforced, the total sum of dental disease would be vastly reduced," the fact remains that, under existing conditions, the provision which exists in London for conservative treatment, or even for mere extraction, is wholly inadequate to furnish proper dental treatment for even this section of the juvenile population of the metropolis; and that unless additional facilities be provided, the vast majority of these children must continue untreated—and suffer from the inevitable and lamentable results of such neglect.

Again, it is shown that a very considerable number of the school children, not less than some 60,000, suffer from defective vision, mainly due to errors of refraction. Parents are informed of the fact, if their children's eyes require treatment; but the majority are too careless or indifferent, or are unable to spare the time needed to see this recommendation carried out, and often too poor to pay for the necessary glasses when these have been prescribed, or to renew them when broken. Thus the bulk of the children recognised as needing it fail to obtain advice; while the hospitals can deal with only a small proportion of those who do seek it. And for many of the children who thus remain untreated, the ordinary routine of school work is directly and positively injurious.

With regard to infectious skin diseases such as ringworm, favus, and the like, which call for special and continuous treatment, the Council is making increasing provision, with results so encouraging that the amount of work needed in this direction may soon be expected to prove, year by year, a decreasing quantity.

Ear disease and adenoids are found amongst a large number of children. The hospitals can deal with the aural cases which call for operation, but they have neither space nor staff nor time for giving due attention to the children suffering from adenoids or from the chronic ear-discharges and deafness which follow so frequently on neglect of the former condition. For such children there exists no means of securing that skilled care and supervision, often prolonged, which is required, and which, were it available, would often preserve life or save hearing.

Many children in the schools are suffering from a general debility which not only quite unfits them for ordinary school life, but renders them an easy prey to zymotic disease and to tuberculosis. The only prospect of real recovery for such children is to be found in the special conditions provided by prolonged residence in an institution intermediate in character between the hospital and the special school. Such homes, it is pointed out, did they exist, "would materially reduce the number of children in the L.C.C. special schools," in addition to facilitating the work of the ordinary schools.

Another common and incapacitating disease of childhood is tuberculosis, of which the cases fall approximately into two groups: one, in which the glands, bones, or joints are attacked, which can be dealt with surgically either in the hospital or by the private practitioner; the second, in which the internal organs are subacutely or chronically involved, could be treated in residential institutions where an open-air life could be secured; and for the larger number of

these cases a limited and graded educational curriculum would be beneficial. For the proper treatment of most of the cases included in this and the preceding paragraph, the provision of a number of residential schools of a modified type would be required.

With regard to children suffering from the other disabilities alluded to in connection with defects and simple diseases of the teeth, eyes, ears, skin, &c., it is proposed that the Council should either (1) provide school surgeries or clinics, where treatment could be carried out by its own medical officers, or (2) make arrangements with existing hospitals and dispensaries. In either case the cost would be provided out of the education rate.

It would seem that, as regards defective vision, the vast majority of cases would be treated with the greatest economy of time and expense, and with the greatest thoroughness, by providing in a certain number of schools appropriately situated the single room and comparatively simple apparatus by which the ophthalmic surgeon could properly examine and prescribe for those cases of imperfect vision which the teacher, after some simple training, would learn to pick out from amongst the children possessing normal eyesight. The care of the teeth presents a problem less easy of solution, though really hardly less important than that of vision; at the same time it is difficult to see how it can be adequately dealt with, except by the education authority itself; and like considerations apply with scarcely less force to the many cases of chronic ear disease and its closely associated conditions.

The report issued coincidentally by a powerful minority of the subcommittee, however, recommends that the Council should utilise existing institutions (hospitals and dispensaries), "giving financial help if necessary, and receiving special facilities in return for any grant of public money." The proposal appears reasonable on the face of it; its practicability will depend upon (1) whether the work of the hospitals and dispensaries can be so modified and extended as to cope efficiently with the extra demands thus made on them, and (2) whether such a partial and piecemeal inauguration of a State medical service is desirable in the interests of the hospitals themselves, as charitable institutions, of the public, and of the medical profession.

In any case, it is obvious that a further increase, and for some time probably a progressive increase, of the education rate will be inevitable on this account. The Council is already committed to the placing of the feeding of necessitous children on the rates, and has voted £10,000 for this purpose; of this, it was estimated that £5,000 would be required before the end of January. Voluntary contributions are ceasing, naturally, now that the rates are to be drawn upon, and it is computed that not less than some £79,000 will be needed during the year for feeding 65,000 children. The prospect is one which "gives furiously to think." Crying though the need be, and rigid as is the logic which insists that if you make education compulsory you must equally make it possible as well as "free," the necessity for wise and discriminating method is no less insistent, if viewed merely from the educational point of view. For is there not, surely, more than a slight risk that the modern school child will grow up to adolescence imbued with the belief that a family entails few duties and no financial responsibility upon its parents, if only these be sufficiently poor, improvident, or lazy?

THE ARMY QUALIFYING EXAMINATION.

By DE V. PAYEN-PAYNE,
Principal of Kensington Coaching College.

THE report of the September examination by the Army Qualifying Board is a very severe condemnation of the candidates who presented themselves on that occasion. Out of the 326 who sat, only 113 passed—less than 35 per cent. The pass mark of qualifying examinations is generally 33 per cent. of the total, and I believe even this low standard is not attained by many who pass the Army qualifying test. So it can be seen that the future officers of our regular forces do not shine in general intelligence, whatever they may do afterwards in their special military studies. The mistakes of the South African war are surely likely to be repeated in our next big war by such material.

It is not only in one subject, but in all, that the examiners report adversely—the failures varying from 21 per cent. in history and geography to 60 per cent. in German. Especially is it to be deplored that 55 per cent. failed in elementary mathematics and 59·8 in advanced mathematics, for these are quite essential subjects for those who are about to specialise in topography and military engineering. The English subjects, too, show deplorable results. The examiners report that the candidates in their essays expressed themselves with some facility, but were too fond of colloquial phrases; few were able to arrange their thoughts in proper sequence or to rise above the obvious and commonplace. As for the *précis* writing (so important to future officers in their writing of reports), it was in most cases "unequivocally bad"; the writers had little idea of the purpose served by *précis* writing; their work was often written in a slovenly manner, defaced by interlineations and corrections, and by bad spelling, arrangement, and composition; the vital defects were recklessness in misstatement and an apparent inability of the writers to read a simple narration with any degree of care and intelligence. This criticism proves that both the candidates and their teachers did not bear in mind the weighty words addressed to the cadets at Woolwich by Lord Roberts at his inspection of them in 1903, when he insisted that the first duty of every officer—and especially of every staff officer—was to write legibly, to spell

correctly, and to have a good knowledge of his own language.

The report goes on to say that much of the arithmetic was very unsatisfactory, the majority of the candidates being unable to deal with the parts of the subject on which special stress is laid in the syllabus. In geometry the results "were very poor indeed." Few were able to deal successfully with a simple problem in algebra. An unduly large proportion of candidates know practically nothing of geography. In science the quality of the work was "distinctly poor": many candidates said that if marble were placed in water it dissolved, forming slaked lime and giving off carbon dioxide. There was no real improvement in the quality of the French, "a lamentable ignorance of sound elementary knowledge" being shown. In the oral French there was fluency at the expense of accuracy. Of ten candidates who offered German, "not one was really good." In Latin the work could not be regarded as satisfactory from any point of view; the majority wrote down mere nonsense in place of translation, and all but a very few of the pieces of prose contained bad mistakes of accidence and syntax. The one candidate in Greek sent up half-a-dozen words of no value.

This is a terrible indictment of the education of our upper and middle classes. But there are a few points that might be adduced on the other side. To begin with, the best candidates for the Army do not take the qualifying examination at all; they have passed, while at school, one of the leaving certificate examinations that are allowed in lieu thereof, such as those of the Oxford and Cambridge Schools Examination Board or of the University Locals.

Again, the time given to the different papers is often inadequate for any but quick writers. For instance, only an hour and a half is given for three essays: although it is expressly stated that they are to be short, still a properly-prepared candidate has to make out his scheme for each one in order to get his ideas into order, and then he will only have fifteen or twenty minutes for writing the essay and re-reading it. Three-quarters of an hour are given for the *précis*—two and a half closely printed octavo pages; a candidate must read these over at least twice before he can start writing, and this often leaves him but twenty minutes for writing out the work. Again, one hour is given for six questions in arithmetic, all but one of which are problems: if a candidate had worked similar problems before he could finish the paper in the time; but if he has not, he will probably be flurried and write down nonsense, whereas a little more time would permit him to write sense. Where the questions are straightforward, as often in algebra, the paper can be completed in the time.

One more point is that there are in all thirteen subjects which have to be passed at one examination; and although the standard may not be high in any subject, still the number does not allow much time for each one in a week of thirty working hours.

One serious defect in the regulations of this examination is that a candidate has to take French *or* German. The consequence of this has been to deal another serious blow to the study of German in England. Naturally 316 out of the 326 candidates take French, as the language with which they are more familiar, and take it again at the competitive examination. Whereas if candidates were allowed to take two of the four subjects, French, German, Latin, and science, those with a taste for modern languages might concentrate on them, as they can in the competitive now.

SIMPLE APPARATUS DESIGNED BY TEACHERS.

THE Association of Public School Science Masters held its fourth exhibition of scientific apparatus and books in connection with the annual meeting at Merchant Taylors' School, to which reference is made on another page. There has been a steady increase in the number of exhibits shown by the members themselves, and in the number of firms of dealers and publishers who take space; the secretary reported that he had been obliged to decline two offers to exhibit in consequence of the whole of the space at his disposal having been allotted, and the committee hints in its report at the possibility of it being necessary in the near future to consider the advisability of hiring a hall in which to hold the exhibition. There can be no doubt that a great advantage is gained by the members in being able to see the products of a large number of firms collected in one room, and although this may chiefly benefit those science masters who live at a distance from London, the fact that some of the exhibiting firms came from Leeds, Birmingham, and Manchester proves that the Londoner is also enabled to see new models of which he would otherwise gain only a rough idea from catalogues.

In the members' section the largest individual exhibitors were Mr. L. Cumming (Rugby) and Mr. L. L. Garbutt (Winchester). The former showed a collection of electrical apparatus, much of which was home-made and all of which was of the simplest description. We especially noticed a tangent galvanometer constructed on the Helmholtz principle; in this there are two pairs of coils, one consisting of five turns of wire on each, connected in parallel, the other of 100 turns on each, connected in series; no money had been expended in giving a finished appearance to the instrument, but the result was a very excellent galvanometer produced at a low price. Still more simple was "a divided circuit apparatus," consisting of three brass strips fixed to a board and provided with binding screws; by its means it was possible to prove (*a*) the law of the resistance in a divided circuit; (*b*) that the current in each branch varies inversely as the resistance; (*c*) that

the current passing through the battery is equal to the sum of the branch currents; the total cost could not have exceeded one shilling.

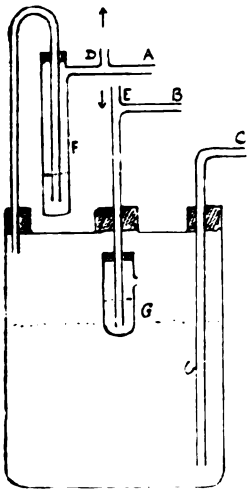

FIG. 1.

Of the many clever contrivances shown by Mr. Garbutt, his two forms of aspirators perhaps attracted most attention; by means of either it is possible to obtain a continuous aspiration in one direction by the use of water-bottles and an alternating flow of water.

In one form (Fig. 1) the tubes A, B, and C are connected to the corresponding tubes of a similar apparatus (which is, however, without the side tubes D and E); water is placed in the tubes F and G, and the action started by a flow of water in the syphoning tube C; when once started, there will be an inflow of air at E and an outflow at D, no matter which of the aspirating bottles is uppermost.

In the second and simpler form (Fig. 2), the water-valves are outside the water-bottles; the openings A and B are connected to the air tubes of ordinary aspirators, and whether the flow of water be from A to B or from B to A, there is a steady inflow of air at D and an outflow at C.

A simple apparatus for showing the volume composition of hydrogen chloride was also shown by Mr. Garbutt; its construction is shown in Fig. 3. To use it, the stopcocks are closed and the two bulbs of equal size are filled with hydrogen and chlorine respectively. The middle stopcock is opened, and the apparatus hung up in diffused daylight for two or three days; when the action is complete, the tube is dipped in mercury and the lower stopcock opened; the change in pressure will be found to be trivial. Lastly, the tube is dipped in water, which fills both bulbs.

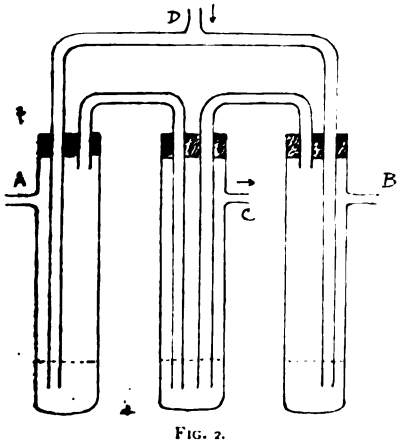

FIG. 2.

Mr. J. Talbot (Harrow) exhibited a new form of science lantern which he has placed on the market through Messrs. Becker and Co. The body is of Russian iron and large enough to carry any form of lamp; the lamp and tray are gripped by a spring slide, which prevents them from slipping even when the lantern is swung into a vertical position; the condensers are easily removed, a feature of importance when certain experiments upon diffraction or interference are being made. The front of the lantern is kept as clear as possible, and both the slide-carrier support and the lens bar can be removed when required.

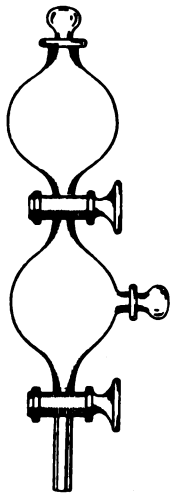
FIG. 3.

An interesting feature of the lantern is that, when used in conjunction with the special stand (also designed by Mr. Talbot), it is possible to project an erect image upon a screen without the use of an erecting prism. The manner in which this may be done is shown in Fig. 4: the lantern is tilted to an angle of 45° and the front mirror set at about 22½° to the horizontal.

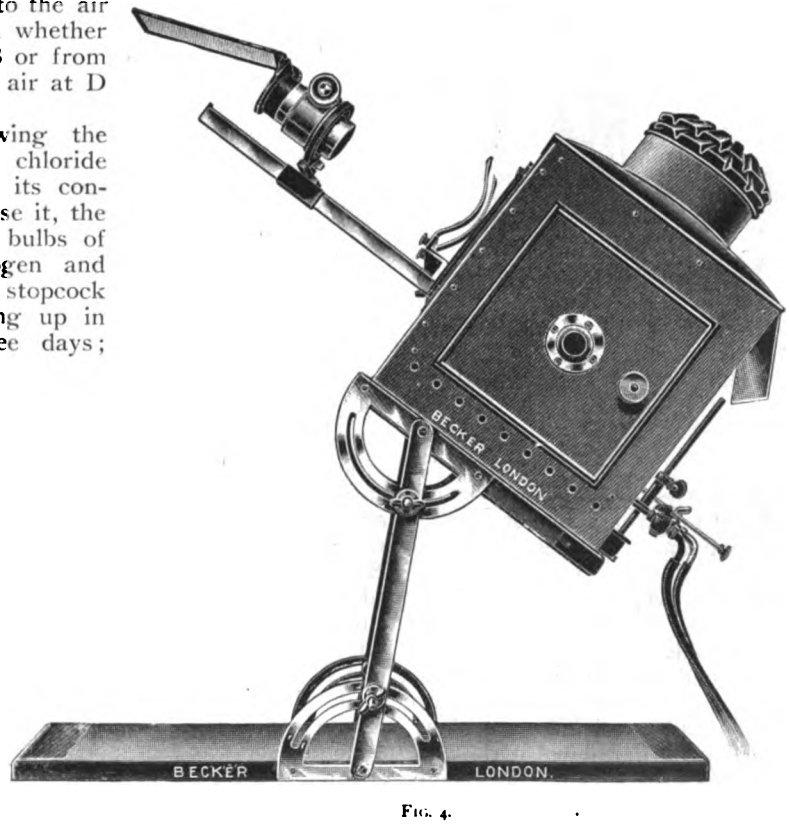

FIG. 4.

A new and improved form of shelf for use in

air and water ovens was shown by Mr. F. L. Wilson (Charterhouse). The holes in these are placed at the ends of slits cut through the shelf to the outside edge; it is thus possible to place the funnels in position without the necessity of tilting, thus removing all risk of spilling the contents. We predict that this simple but useful modification will be found in general use ere long.

The use of vulcanite for making burette taps was shown by Mr. G. W. Hedley (Cheltenham). They are made exactly like ordinary glass taps, but, since they can be shaped by any carpenter who owns a lathe, their use enables a burette to be repaired at once without the necessity of sending the instrument away.

In the account we gave of the exhibition held last year, mention was made of a new form of voltameter introduced by Mr. Hedley; during the past twelve months he has still further improved it, and it now takes the form shown in Fig. 5. The chief advantage of this over the older forms being that the platinum is attached to strips of vulcanite (shown by the black lines in the diagram), it is therefore possible to use much thinner foil, and there is but little fear of breakage. We understand that the instrument has not yet been placed on the market, but hope that this will soon be done, since so useful a contrivance deserves to be universally known.

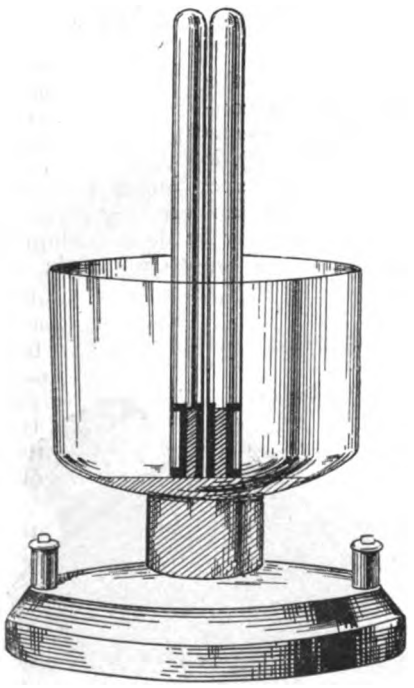

Fig. 5.

The Rev. A. L. Cortie, S.J. (Stonyhurst), exhibited a very simple electrical condenser. It was made by covering the thick end of an ordinary pen-holder with tinfoil; to one end of this was attached a circular disc of zinc, and at the other end a bent pin carried two leaves of thin paper; the stand consisted of a short ebonite rod stuck through a paraffined cork, and the condenser was attached to this by means of a drop of sealing wax.

Dr. T. J. Baker (King Edward's School, Birmingham) illustrated a new method of showing the decomposition of water by means of potassium, &c. It is probably not generally known that if a small quantity of naphtha is poured upon the surface of the water before the metal is added, the latter floats between the two liquids; the action takes place quite slowly, and all fear of an explosion is avoided.

The only biological contribution made by the exhibitors was sent by Mr. O. H. Latter (Charterhouse), who showed a series of depigmented tadpoles; these had been soaked in a solution of hypochlorous acid for about fifteen minutes, the result being that the whole of the colouring matter had been removed and the internal organs were rendered perfectly visible.

THE REFORM METHOD OF TEACHING LANGUAGES.[1]

By Hardress O'Grady.

I WILL begin by describing roughly a school organised on ideal lines by a senior master who understands the importance, not only of oral work, but also of the manual or writing work, the necessity for progress in the learning of vocabulary and of grammatical usages, the need for imparting a knowledge of history, manners, and literature. We will suppose, for the sake of simplicity, that there are six forms, of which the average ages are from twelve to eighteen years.

In the first form the teacher will begin by assuming that his pupils know no French (or German) at all. Before he utters a word of the foreign language he will give them a thorough understanding of the speech sounds of English, of their *local* English. After that, when they realise the part which different voice organs take in forming familiar sounds, he will teach them, or get them to evolve, the sounds of the foreign language by comparison with and extension of the English sounds. Thus, roughly speaking, he will place the open French *o*-sound between open English *o* and close English *o*-sound. This ought to take not less than ten lessons, and at the end of them the class should be able to read sounds from the sound chart, just as a singing class reads from sol-fa notation. The next step is to teach, without opening the books, some ten or fifteen lessons from such a course as Dent's "New First Book" or Ceppi's "Beginners' Book."

In order to train the manual centres as well as the visual and auditory centres, the teacher writes on the board the phonetic script representing the sounds of new words, and all exercises (and they should be abundant) are worked at first in phonetic script. When the teacher is quite sure that the form has grasped the matter taught it in this manner, he passes with great caution and by means of considerable blackboard work to the ordinary spelling of the foreign words. Then he does once more in ordinary spelling the lessons already taught in phonetic script, comparing lesson by lesson. The result is that a correct accent is acquired from the very beginning.

[1] From a paper read at the North of England Education Conference, Manchester, on January 8th, 1909.

From that moment the phonetic script is ancillary. It serves to correct or to point out novelties.

Now, as to the teaching of the words and grammatical usages. The mistress or master uses a large wall-picture, composed for the purpose, to which the class-book serves as a handbook and exerciser. From this picture—these pictures, rather—the words are taught by pointing out the objects, persons, and so on, by associating already known words with new words, by contrast, by the use of gesture and of any ingenious conceit of which the teacher can think. The words are constantly repeated in the same setting and in new settings, and pupils are encouraged to guess reasonably, to infer, and to think. I need not point out the educative value of this.

Now in order to secure progress, to prevent useless overlapping, the course of the whole school should be mapped out by a central authority, and there should be for each form minima of new words and grammatical usages, so that in the first form pupils should learn the commoner words, in the next form more of the common words, in the next less common words, until the rarer words and so on are finally learnt at the top of the school. I lay great stress on this organisation and system of minima. While each master, within certain limits, should be free to teach the minimum by his own methods, the minima should be fixed and unalterable and the term and yearly tests of these should be rigorously exacting. At the end of the first year I think that at least 800 words, together with the use of the article, the feminine form, the plural form, the possessive adjectives and pronouns, the demonstratives, the present indicative, the past tense (*not* the imperfect), and the future will have been learnt thoroughly, and new apperception masses with new reflexes formed. Dent's book contains more than the minimum I give, and Ceppi's rather less. Both are excellent books.

As regards the teaching of grammar, the knowledge of the laws governing changes should be evolved by the pupils from the examples learnt as vocabulary. The teacher should be a guide and a warner, and should act as a spur to the pupils. Let me give an example. In Dent's French book, which is most familiar to me, by the time the fifth lesson is reached, sufficient material has been collected to make the following work possible. The master writes on the board all the adjectives learnt, together with their feminine forms, also learnt in the course of picture work. Then he asks the form to class them in columns, and he may use coloured chalk to lay stress on the different feminine forms. With the aid of the pupils he arranges them as (1) adjectives which do not alter in the feminine; (2) those to which an *e* is added; (3) those which, ending in *-eur* in the masculine, end in *-euse* in the feminine, and so on. After this blackboard arrangement it is easy to suggest the rules.

In the second year the vocabulary and knowledge of grammatical uses are extended to embrace all the commoner forms, though syntax should have no place until much later. Altogether, some two thousand words, &c., ought to be known thoroughly by the end of that time. For this purpose a specially written continuation book should be used, together with that ingenious thing, a picture vocabulary. Question and answer and grammatical exercises in which the required inflection or verb is introduced are employed both for oral and written work. Dictation should begin now, and little, short, free compositions built up from a blackboard skeleton or a list of allied and associated words.

In the third year comes the reading of simple texts, which are used as the basis of conversation and written work, and as an aid to grammar learning some such book as Miss Batchelor's exercises should be used. These text-books are accompanied by *questionnaires*, grammatical and word-forming and building exercises, using the vocabulary read as material. They should bear upon phases of German or French life and character. Each text should be complete in itself, or consist of, say, three short stories. I deprecate snippets and selections of twenty or thirty lines. Probably several texts should be worked through in a year, one to be done thoroughly, the others serving for rapid reading. A great deal of reading ought to be done.

In the fourth year (average age sixteen) should begin essay writing, while the text-books, constructed like those of previous years, should be more difficult. They ought to deal with historical incidents of France and Germany, in the form of stories or of long passages from historians. In the fifth year essay writing should be greatly developed, and a German or French history book used as a text-book, while a modern play or two, with the verse of poets of the early nineteenth century, are studied rapidly. One day a week or a fortnight might well be given to a debate in French or German, at which two short papers would be read. This debating would go on until the end of the school career. In this form translation from the foreign language might begin. The last year ought to be reserved for the study of literature, while older authors are read rapidly. Now, too, when the ability to use the foreign language on one hand, and the English on the other, has been acquired, we may, perhaps, begin translation from English into the foreign language. Personally, I should be inclined to leave such work to the university or training college period. On the other hand, I should encourage the writing of German and French verse at school.

We have, then, certain clear principles of method:

(1) To teach words from pictures and objects first, and from the sight of the spelling, from the spoken sound and by the motor exercise needed to write them, then by associating them with and deducing their meaning from other words.

(2) To encourage word-building and word-formation.

(3) To teach grammar inductively (certainly at first).

(4) To use pictures and text-books as the basis of conversation.

(5) To exercise knowledge by writing as well as orally.

(6) To choose texts bearing on foreign life and consisting of complete passages.

(7) To study foreign life, history, and literature.

(8) To encourage pupils to make their own grammar books and their own classified vocabularies.

(9) To avoid as much as possible the use of the mother tongue until late in the school career.

SCIENCE FOR THE CLASSICAL SIDE.[1]

By G. H. MARTIN, M.A.
The Grammar School, Bradford.

THE arrangement of a satisfactory scheme of science for the classical side of a school has always been a matter of great difficulty, not only to myself, but also, judging from the report of the British Association committee appointed to consider and advise on the curricula of secondary schools, to many other science masters; for, as the report puts it, "Some of our correspondents state that science on the classical side is very weak; there is no favourable report in this connection."

The difficulty seems to be at least twofold: First, the limited time allotted to the subject in the weekly time-table; and, secondly, the fact that science is dropped altogether at an early age. The first limitation makes it impossible to take more than one subject at a time, and it is a difficult matter to decide what that subject shall be in each of the three or four years in which science is taken by a boy on the classical side. But the main point I would lay stress upon is the fact that science has to be abandoned altogether at the end of the third or fourth year. This may or may not be a necessary evil, as to which I will not now express an opinion, except perhaps to say that I can see no sound reason why a candidate for a classical scholarship should not be expected to show at least a nodding acquaintance with matters which meet him at every turn of his life, so long as a boy who wishes to take a science scholarship is expected to show a certain amount of familiarity with subjects which, in the majority of cases, will have no bearing whatever on his future career. But whether the evil be a necessary one or not, the fact remains that the science course of a classical boy has to be compressed into the space of three or four years, one subject only being taken at a time, and often a different one each year.

In the circumstances, it is impossible to expect the average boy to show much interest in the work he is doing: it leads nowhere; it is more or less looked down upon in classical circles (although personally I have nothing to complain of in this respect); and when, under stress of work, more time is demanded for his classical or literary studies, then science is the first subject to suffer. One can scarcely see how it could be otherwise; but the result is that when a classical division does migrate into a science laboratory or lecture-room once or twice a week, it often does so with an air of superior aloofness, or else with the barely concealed expectation of having rather a good time—attitudes of mind which are scarcely conducive to good work. I refer here more particularly to classical divisions taking their last year of science; and the hopelessness of attempting to instill anything like enthusiasm for the disjointed fragments of an elementary science course into boys imbued with such ideas impressed itself upon me recently to such an extent that I decided to make a new departure altogether.

To meet the difficulties referred to above, it seemed necessary that the work should not only be interesting in itself, but that it should continue to be an object of interest after it had ceased to be a school subject; in other words, that it should be capable of development into a hobby; and a subject which lent itself well for the purpose, and had the additional advantage of being one in which I myself was greatly interested, was geology. So I made the experiment in a very tentative fashion in the second term of last year, and with the most gratifying results. A complete alteration was at once apparent in the boys' attitude towards their work: keenness succeeded to indifference, and the homework was greatly improved both in quantity and quality. The amount of interest that was being taken in the new departure was indicated when I asked one of the boys why he liked geology so much more than the chemistry he had been doing, and he replied, "Please, sir, it isn't work!"

That term being the Easter term, there were no examinations at the end of it, and at the end of the summer term the division of which I have been speaking took the Oxford and Cambridge Lower Certificate Examination, but did not include science in the list of subjects.

Last term, however, I had an opportunity of examining a new division of the same standing in its first term's work, and I was greatly pleased with the result. Not only were the questions on the more familiar parts of the subject well answered, but really good attempts were made at answering questions of a more or less speculative nature. The average mark of the division was considerably more than 50 per cent., a refreshing change from the familiar low level of the ordinary science papers of classical divisions.

I have instanced geology—or I should, perhaps, call it physical geography—as a suitable subject, but there are doubtless many others equally suitable; and the one to be taken must

[1] A paper read at the annual meeting of the Association of Public School Science Masters.

depend both upon the inclination of the master and the local conditions and opportunities.

Personally, I am prejudiced in favour of geology, but at the same time I think I am right in saying that this subject has many advantages. In the first place, it is one which requires the help of most of the other sciences at one time or another, so that even in an elementary course a boy comes into touch with a number of chemical and physical facts and phenomena; and since these are intimately related to a subject in which he happens to be interested, he is far more likely to remember them than he would be if he had studied them as independent details. He even finds the determination of the specific gravity of a body interesting when it is a necessary prelude to the discovery of the identity of a mineral.

Again, geology is essentially an outdoor subject. Strictly speaking, it should be taught out of doors almost entirely in the earlier stages, but this is, unfortunately, impossible. It ought to be possible at most schools, however, to arrange occasional field-excursions, and, apart from this, it gives the boys themselves a motive for and an interest in their own walks which are often entirely absent otherwise.

Lastly, there is plenty of scope for original experimental work in the laboratory. Many natural phenomena are capable of easy reproduction on a small scale, and it is sometimes possible to investigate both quantitatively and qualitatively in a laboratory experiment some of the processes by which the earth is being moulded into shape. Incidentally, I may mention that in the course of our investigations we have found out that although the stalactites of a limestone cavern are formed by the slow dropping of a solution of calcium bicarbonate from the roof of the cavern, yet so far we have not succeeded in making a stalactite from such a solution. On the other hand, if lime-water be allowed to drop from a burette at the rate of about three-quarters of a cubic centimetre per day, a hollow stalactite of crystalline calcium carbonate is slowly formed, a length of an inch and a half being reached in the course of six months. This result seems to show that the stalactites formed under new bridges must be different from those formed in limestone caverns, since, so long as there is an excess of lime in the mortar, the liquid passing through it cannot possibly contain the excess of carbonic acid necessary to produce bicarbonate of lime.

This is, however, by the way, and it is mentioned only to show the possibilities of elementary geology.

Whatever the subject taken, it should be one that can be developed into a hobby when the boy leaves school (though one could scarcely expect this to be done by more than a small proportion of the boys), and it should have such a relation to the boy's daily life that, even if he dropped it at the end of the course, his mental outlook on his surroundings would nevertheless be permanently quickened and enlarged.

THE ITALIAN EARTHQUAKE.

THERE appears to be little doubt that the loss of life caused by the great earthquake in Sicily and Calabria on December 28th, 1908, was greater than that of any other earthquake recorded in history. Mallet estimated in 1850 that during the preceding 4,000 years thirteen millions of people had been killed as the result of earthquakes. In 1896 the sea waves due to an earthquake of submarine origin caused the destruction of twenty thousand lives on the coast of Japan in a few minutes; and 200,000 people are believed to have perished in the Tokyo earthquake of 1703. The death-roll of the recent earthquake is said to exceed a quarter of a million, and is, therefore, longer than that of any other known human calamity of the same nature.

Everyone shares in the sympathy expressed to Italy for the terrible disaster which it has suffered by the earthquake. Messina and Reggio are virtually in ruins, but the President of the Chamber of Deputies announced on January 8th that they will rise again. Whether the new cities will be able to withstand similar earthquakes which will certainly shake their foundations again in the future depends upon the use that is made of past experience. In Reggio all the new houses of not more than thirty-two feet in height resisted the shock completely, thus suggesting that in a troubled part of the earth's crust like that of Sicily and Calabria restrictions should be placed upon the erection of very high buildings.

The cause of the recent earthquake, like that of most earthquakes in the affected district, appears to have been the fracture and sudden slip of a strip of the earth's crust a few miles beneath the level of the sea near the coast. The displacement thus caused in a part of the bed of the sea gave rise to the wave which did some damage on the sea-front at Messina and Reggio. The reports as to the effects of this wave are said to have been greatly exaggerated, for the water rose gently and then subsided. Nearly all the actual destruction was due to the shaking of the land upon which the cities were built. That other great earthquakes will occur again in the peninsula of Italy may be predicted with confidence, for the forces which have brought that part of the earth above sea-level are still at work.

Italy is on a rising fold of the earth's crust, and is, therefore, subject to earthquakes due to the fracture of rock masses stretched beyond the breaking-point. In the words of Prof. Milne, whose address on earthquake studies, given in THE SCHOOL WORLD for May, 1908, is now of particular interest, "wherever we find in progress those secular movements which result in the building up of countries or mountain ranges, there we should expect also to find a pronounced seismic activity. Thus, while admitting a few small earthquakes to be volcanic in their origin, we recognise the majority of these disturbances as the result of the sudden fracturing of the rock crust under the

influence of bending. The after-shocks which so frequently follow large earthquakes announce that the disturbed strata are gradually accommodating themselves to the new position." It is not surprising that people should be induced by the climate and position of southern Italy to make their homes there in spite of its being a black spot upon a seismic map; but it is strange that, with the knowledge of the danger to which the district is liable from great earthquakes, the Government and the municipal authorities should permit the erection of buildings completely unsuitable for a land troubled with such disturbances.

THE VENTILATION OF SCHOOL BUILDINGS.[1]

General Considerations. — Ventilation implies the continuous adequate supply of pure air to all parts of inhabited buildings and the removal therefrom of fouled air without causing inconvenience or ill-health to the occupants.

In order to ensure this it is necessary to consider:

1. The supply of sufficient quantity.
2. The proper quality of the air supplied.
3. The suitable degree of temperature and humidity—

(*a*) Of the air as supplied.

(*b*) Of the air in the room (or other enclosed space) during occupation.

4. The distribution in equal proportion to each occupant.
5. The complete removal of fouled air.
6. The provision of such ventilation—

(*a*) Without producing discomfort or feeling of draught, or any gradual though imperceptible depression of health.

(*b*) In such a way as to maintain full bodily and mental vigour.

(*c*) In such a way that the whole process shall be reasonably practicable and economical.

Without a knowledge of the above requirements and a practical knowledge of the complicated physical problems involved in ventilation, it is impossible to devise a rational and efficient scheme of ventilation, or to form a trustworthy judgment upon any schemes of ventilation which may be under consideration.

The Amount of Air required for Efficient Ventilation.—The problem of the satisfactory ventilation of rooms intended for the accommodation of a considerable number of persons must be regarded as being still in the experimental stage, and therefore no categorical statement can be given as to the amount of air required to secure the object in view. The committee accordingly confines itself to recommending that the allowance of air for each person should not be less than 2,000 cubic feet per hour and to giving an indication of the reasons which lead it to this recommendation.

It regards as ideal ventilation the condition of things which would be given by general perflation on a day when the natural temperature of the air is 62° or 63° F. In practice the air supplied must be confined if it is to be warmed; cold walls and windows also disturb the simplicity of the arrangement.

The committee has no evidence to show what amount of air would be supplied under the conditions of ideal ventilation above mentioned; it would probably be far larger than the amount supplied by ventilating systems in practical use, and the estimates of the quantity of air required are based upon other considerations.

The most common basis of calculation starts from de Chaumont's estimate of the amount necessary to prevent any disagreeable smell or feeling of closeness being perceived by a person coming from the outside air directly into the room. This, again, has been interpreted by various authorities in terms of the excess of carbonic acid in the air of the room over that in the outside air.

Bacteriological tests of air have been made, but no quantitative statements as to the amount of air required have been based upon the results.

Another basis of computation is the amount of air necessary to remove the "heat of combustion" of the persons in the room. It has been calculated that this heat is sufficient in an adult to raise the temperature of 3,000 cubic feet of air per hour by 5° F.; and, generally speaking, it is by the warming of the air through emission of heat from their bodies that the individuals in an occupied room dispose of their waste products and supply themselves with their share of the fresh air which is delivered to the room. It is clear that it is desirable to remove this heat by removing the air which has been fouled. Upon this basis of calculation here put forward 2,000 cubic feet per hour must be supplied to each inmate for that purpose.

A third consideration is the removal of the solid and liquid particles which find their way into the air from the skin or clothing, or from the mouth, or by raising the dust from the floor and surfaces of seats, desks, &c. These particles, which often carry organisms, pathogenic or otherwise, may be regarded from the physical point of view as fine dust which is constantly in process of settling, but so slowly that the greater part of it takes part even in the slow circulation of the air in an inhabited room. It is clear that the less vigorous the circulation of air through the room the more the particles hang about the room, and we have thus another reason for maintaining the flow of air at the highest figure compatible with the comfort of the occupants.

We may sum the considerations by saying that a supply of 1,000 cubic feet per head per hour to

[1] From a report of the Committee of the British Association on the Conditions of Health essential to the carrying on of the Work of Instruction in Schools, consisting of Prof. Sherrington (chairman), Mr. E. White Wallis (secretary), Sir Edward Brabrook, Dr. C. W. Kimmins, Prof. L. C. Miall, Miss A. J. Cooper, and Dr. Ethel Williams. The committee had in co-operation with it in its investigations and deliberations the valuable assistance of Dr. C. Childs, Dr. James Kerr, Dr. W. N. Shaw, Dr. C. E. Shelly, Mr. J. Osborne Smith, and Mrs. White Wallis.

healthy occupants will barely save the room from becoming disagreeable. A supply of 2,000 cubic feet is the smallest that can be recommended for health, mental energy, and comfort. More still would be required in order to approach the conditions of ideal ventilation.

THE SUITABLE DEGREE OF TEMPERATURE AND HUMIDITY.—Recent investigations, more especially those of Haldane and others in this country, of Flügge and Paul in Germany, have shown that the temperature of a room and of the air supplied is of greater importance than has generally been supposed; that a high degree of temperature in a room (*e.g.*, above 68° F.) produces languor, sense of mental fatigue, and the other symptoms associated with crowded assemblies, to a greater extent even than polluted air; and that these symptoms are aggravated by stagnation and immediately relieved by movement of the air surrounding the body.

It has been shown that a high degree of humidity of the air does not interfere with the comfort and mental energy of the scholars in a room provided that the temperature is not above 65° F. Above that temperature it produces marked decrease of mental energy.

The temperature most conducive to comfort and mental vigour in a schoolroom is between 58° and 62°, irrespective of the degree of humidity.

Further investigation is required in order to determine the maximum temperature of the air which may be introduced into a room without producing physiological disturbance. It would be probably safe to state that in no case should the temperature of the warmed air so introduced exceed by more than one degree the proposed normal temperature of the room.

THE DISTRIBUTION IN EQUAL PROPORTION TO EACH OCCUPANT.—It is generally assumed that in a mechanically ventilated room the air is thoroughly mixed, so that the fresh air supplied is distributed in equal proportion to each occupant. Further observations are required in this respect, and also upon the best methods for securing this equal distribution, the best position, size, and shape of inlet shafts, the relative sizes and positions of inlets and outlets.

In many schoolrooms ventilated mechanically, inlets and outlets are so arranged that short-circuiting of the air supply is inevitable, and occasionally stagnant spaces are to be found.

In "naturally" ventilated rooms the fresh air supplied during cold weather inevitably gravitates to the floor unless it be warmed before admission, forming a cold floor current which chills the feet and lower extremities of the occupants without materially contributing to the ventilation.

The heat evolved from the body of each individual undoubtedly causes a local upward current of air, and induces a fresh supply of air to each body. The force of this upward current and its value so far as it supplies fresh air to the individual require further investigation. It probably contributes considerably to the special supply for each occupant of the room.

VENTILATION AS A MEASURE FOR REDUCING RISKS OF INFECTION.—By far the most important measure for the prevention of infection when a scholar has contracted infectious disease is the prompt detection and exclusion or removal of the infected individual.

Another important measure is the regular and effective cleansing of the floor, walls, ceiling, furniture, &c., in the room by means of damp cloths in such a way as to remove the dust and the bacteria contained in it without allowing them to be merely displaced and scattered about in the air of the room. Efficient ventilation, however, can to some extent be made to help in reducing the risks of infection by removing the majority of microbes present in the air.

In the investigations of Carnelly and Haldane in 1886–9 it was shown that mechanical ventilation removed most of the microbes contributed from the bodies and clothing of the occupants.

These observations indicated that in mechanical ventilation a steady movement of the air was maintained throughout the room, tending to prevent the microbes from settling on surfaces and to convey them out of the room.

It is desirable that similar investigations should be carried out with the air of the more complete methods of bacteriological investigation now at our command.

COMPARISON OF MECHANICAL AND NATURAL VENTILATION.—On comparing together mechanical and natural ventilation it is seen that each has its advantages and disadvantages. By means of mechanical ventilation the air supply can be better controlled, washed and filtered from dust, heated or cooled; the disturbing influence of variation in the force and direction of wind can be more easily overcome; the required temperature of the room more steadily maintained.

On the other hand, mechanical ventilation is far more costly: the process is placed almost entirely in the hands of one individual, generally remote from the schoolroom, whilst at the same time both teachers and scholars are deprived of the salutary object-lesson afforded by "natural ventilation" in the desirability of admitting fresh air into all occupied rooms and dwellings.

RECOMMENDATIONS.—The committee is of opinion that a large number of investigations will have to be made before a final opinion can be formed with regard to many points in connection with the problems involved in practical ventilation; for instance, the position and size of inlets and outlets, the best means for the impartial distribution of the fresh air supplied, the relative advantages of mechanical as compared with "natural ventilation," the best mode of conveying heat.

Until such final opinion is formed the best systems of ventilation will suffer discredit owing to faulty and defective methods of carrying them out; great expenses may be needlessly incurred

in the construction of ventilation installations, whilst those who are responsible for the management of schools will be constantly harassed by new regulations and uncalled-for expenditure without obtaining any real improvement in the ventilation.

The committee has endeavoured to make investigations on some of the points mentioned above, but has not the means or authority for carrying them out. It suggests that inquirers well versed in the scientific aspect of the question, and acquainted with the practical methods employed for ventilation, as well as with the requirements and practical business management of schools, should be commissioned to carry out such investigations; that schoolrooms, some provided with mechanical, others with "natural" systems of ventilation, be put at their disposal for this purpose; and that the time is ripe for a carefully conducted investigation on scientific lines of the whole subject of school ventilation.

THE CO-ORDINATION OF EVENING STUDY.

THE question has recently been under consideration of co-ordinating and systematising advanced evening courses of study so as to link together various elements into an adequate scheme of higher education for evening students in London; and in particular the advanced scheme of work conducted by the University of London through the Board to promote the Extension of University Teaching, under the scheme of study in the humanities, and the advanced evening work in English language and literature at King's College, London.

The fact that there are many evening students who desire opportunities for systematic study in different departments of knowledge is now becoming widely recognised by universities and public education authorities. The problem of how best to encourage pupils who, having left school, are entering upon the ordinary occupations of life to continue their education is acknowledged to be of great urgency. For such students the ordinary course of study for a university degree is not suitable, though the standard of attainment the students may be able to reach in special subjects may be even higher than that required for a degree. The evening courses at polytechnics, the advanced work in English at King's College, the advanced courses of study in the humanities arranged by the University Extension Board, are all attempts to deal with one phase or other of this important problem. The time has come to consider how these various efforts can be systematised so as to create an adequate system of higher education for evening students. It is clearly the University that can bring about the necessary co-ordination that will link up these lines of educational effort.

It is in the domain of humanistic studies that the need is greatest. The grant of £500 voted by the London County Council towards advanced work in English for evening students at King's College, London, is a noteworthy event which opens the way for fresh advances. The scheme of English studies at King's College designs to provide opportunities for advanced study in the evening, not only for students who are working for the degrees of the University, but also for students who are not proceeding to degrees but desire to make a thorough study of English. With the view of encouraging students to pursue a complete course, it is understood that the authorities of King's College are proposing to award a diploma. Two or three years ago the London County Council established a system of evening lectures in literature, intended partly for teachers and partly for young people who have recently left school. An attempt was then made to bring these lectures into some vital relation with the University of London, which resulted in the adoption by the University of a scheme under which ten exhibitions were to be offered annually to students who had obtained certificates at the County Council evening lectures, for the purpose of enabling the holders to undertake the advanced course of study in the humanities extending over four or five years. The scheme of work for what is known as the Chancellor's University Extension certificate has now been in existence for five years, and last year for the first time students were in a position to take the final examination. Three students who had completed five years' study took this examination in history. That this scheme of work gives satisfactory results is shown by the reports upon this examination.

What has become necessary is to bring the University extension advanced work and the King's College advanced work into relation with one another, and thus establish, on a permanent footing, an adequate system of work in English language and literature, making a ladder for the abler pupils from the elementary schools, through secondary schools, and continuation evening schools, on to the University extension courses, and finally up to specialised work.

In order to link together the different elements, so as to weld them into an adequate scheme of higher education for evening students, two things are necessary: (1) that a suitable award should indicate the completion of the whole course of work, and (2) that a scheme should be framed that would meet the case alike of evening students carrying on their whole work in a college of the University, and of students carrying on their work at University extension courses or partly at such courses and partly at a college.

This co-ordination would be advanced if a university diploma were granted under regulations adapted alike to the college conditions and to the university extension conditions.

Under the present scheme of advanced work in the humanities in connection with the University of London, the award is styled the Chancellor's University Extension certificate, but this name

does not convey an adequate impression of the value of the work required under the scheme. If this certificate were called a "diploma" this difficulty would be met, and the name would convey to the public mind the importance of the course of work required for it. It is reasonable to hope that, if a scheme of this kind were adopted, the London County Council might extend still further help to enable schemes of study to be arranged not only in literature but also in history and in economics.

We are glad to be able to record that the Senate of the University of London approves generally the proposal to award such a certificate, to be called a "diploma in literature," on the lines indicated in the following outline regulations.

A certificate, to be called a diploma in literature, shall be awarded under the following conditions:

(1) The student must have pursued a three years' approved course of study in literature—(*a*) at King's College under the scheme of evening instruction in English language and literature; or (*b*) at some other institution, under a scheme approved by the University; or (*c*) at a University extension centre, under the scheme of study in the humanities.

(2) The student must, after completing the work under (1) (*a*) or (1) (*b*) or (1) (*c*), have pursued for one year an approved specialised course of study in some department of literature, either (i) at King's College under the advanced scheme of evening instruction in English language and literature, or (ii) under a lecturer approved by the University for the purpose.

(3) The student must also have passed at the end of the four years' scheme of study a final examination on the whole course of work (consisting of at least three papers) conducted by independent examiners.

PERSONAL PARAGRAPHS.

THE headmaster-elect of Owen's School, Islington, will be sadly missed by the Assistant-masters' Association. Mr. R. F. Cholmeley presided during last year over the deliberations of the A.M.A. executive committee with good judgment; he has ably represented the association on the Federal Council; and he has thrown himself with rare enthusiasm into the editing of the *A.M.A.* In this last work he has shown himself the master of a valuable journalistic style, bright and caustic, lively and direct. I shall expect great things—and I believe great reforms are possible—of Mr. Cholmeley's *régime* at Owen's. A scholar of Marlborough under Canon Bell, a scholar of Corpus, Oxford, in the best days of "Tommy" Fowler and Arthur Sidgwick, more than twenty years a master at St. Paul's School, he has undoubtedly absorbed much of what is best in English secondary education. One would not expect such a man to allow his pupils to be instructed on the narrow lines of red-tapism and cram. It would be refreshing to hear of cases of whole forms *not* passing certain examinations, of a little more of the humanities, especially in connection with the ancient languages, infused into the curriculum, and of a few scholarships won at Oxford and Cambridge in subjects other than mathematics and science. Some of his own feeling for English literature, Shakespeare in particular, he will certainly impart to the young Islingtonians. Well, good luck to Mr. Cholmeley, a good man with a good chance of doing good work!

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But to speed the parting guest. Happily the work of Mr. Easterbrook is too well known to ask any eulogy from me. Twenty-six years is a good round period for a headmaster to rule a school: I am reminded that Richard Lee reigned just that number of years at Christ's Hospital. The quarter of a century might well be set as the normal limit of time for the work of headmasters. Mr. Easterbrook found his school in a small backwater, and by availing himself of the educational currents of the time managed to steer it into broad quick waters. He is, educationally, a London man every inch of him. St. Mark's, Chelsea, and University College, London, educated him and gave him his degrees. He has worked all along in London schools. He has long held the treasurership of the I.A.H.M., succeeding Mr. R. W. Hinton, I believe, in that office. Report has it that Mr. Easterbrook has recently married.

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My friend Mr. Thomas Hay, headmaster of Midhurst Grammar School, has been elected, I see, to Chelmsford Grammar School. Mr. Hay's work in revivifying Midhurst school in somewhat difficult circumstances has been much appreciated, and apart from his school work he has radiated much thoughtfulness and culture into the life of the town. In spite of the circumstances of the retirement of Mr. Rogers, there seems to have been a large field of candidates—considerably more than a hundred, I am informed. Mr. Hay's previous experience of the school, as an assistant-master from 1899 to 1903, no doubt stood him in good stead.

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Cranleigh School had some little difficulty in finding a suitable successor to Dr. G. C. Allen, who was educated at Wellington and St. John's, Cambridge, and gained his teaching experience at Wellington and Dulwich. He has held his headmastership some fifteen years, and his only son has recently joined the staff of Christ's Hospital. Cranleigh School is a young foundation, not yet fifty years old. Its fortunes have now been entrusted to a layman, Mr. C. H. Tyler, a man of strong character hailing from Rossall. His antecedents are connected with Charterhouse, where he was captain of football, and Pembroke, Cambridge; he captained Cambridge Association football in both 1888 and 1889. He adds to his classical attainments a knowledge of German and French, both acquired abroad. It is a good

sign of the times that elections to headmasterships of men more than forty years of age, men with plenty of varied experience, are during recent years growing more frequent. Here and there a Dr. Nairn may in time justify himself, but it is a risky experiment.

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Of Mr. W. S. Bambridge, who has just completed forty-five years' service as music master at Marlborough College, I can speak from personal experience. Gatherings of the staff at his house were at one time, and I imagine still are, one of the privileges of life at Marlborough. I have known, like most amateur singers, many sorts of accompanists, and I fear it is solid truth that the majority of them had better never have volunteered to play. Mr. Bambridge is indelibly printed on my mind as the ἰδέα of a piano accompanist. He is mere sympathy with the singer flowing on to the keyboard through the deftest of finger-tips. Forty-five years have surely earned him a pension!

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The Rev. T. L. Papillon, says the *Times*, will resign next June the vicarage of Writtle, which he has held of New College, Oxford, since 1884, and will reside at St. Albans, of which he is an honorary Canon. To a generation of classical scholars which is now beginning to pass away, his was a name of some significance. Personally, I first knew his work through the "Manual of Comparative Philology," written when he was a fellow and lecturer of New College, and published by the Clarendon Press in 1877. The whole complexion of the science of comparative philology and ideas as to its educational value have altered considerably since that date. Papillon's "Virgil" is a book still extensively used, I believe.

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It is some thirty-five years ago since the Rev. Gerald Stanley Davies was appointed to a mastership at Charterhouse by Dr. Haig Brown. He now succeeds Dr. Haig Brown, after the brief interval filled by the Rev. Dr. Jelf, in the mastership of Sutton's Hospital in the City. I had the privilege of being shown over the delightful buildings of the Charterhouse by Dr. Haig Brown. What zest he had in describing its treasures!

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Five men and nine women have recently been awarded diplomas in education at Oxford. Mr. M. W. Keatinge, the reader in education, is popular with his students, whom he infects with his own enthusiasm for education in all its branches. His recent book, "Suggestions in Education," is a very able attempt to find a basis for educational methods in modern psychology.

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The Rev. Walter Boyce, of King's Lynn Grammar School, probably comes more often into contact with his sovereign than any other headmaster. The King presents annually a gold medal for general proficiency to the scholars of King's Lynn School, and the winner is introduced into his Majesty's presence by the headmaster. Mr. Boyce has had educational experience in Jamaica and at Ipswich School, and has been a headmaster more than twenty years.

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The new chairman of the A.M.A., Mr. W. A. Newsome, is a science master at the Stationers' School, Hornsey. He has been a hard worker on the committees of the association, and was one of the earliest members in the days of Mr. J. Montgomery, who was the first secretary.

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Dr. Upcott, who is this year's chairman of the I.A.H.M., was a Sherborne boy under Harper, who was educated at the school over which Dr. Upcott now rules—Christ's Hospital. Before he was elected to govern the "Blues" after their migration to Horsham in 1902, he had had a varied experience, first as an assistant at St. Mark's, Windsor, and at Westminster under Dr. Rutherford, and then as head of St. Mark's for five years, and of St. Edmund's, Canterbury, for eleven years. With nearly seven years' experience in reorganising Christ's Hospital, Dr. Upcott probably knows as much about English boarding schools as any man of his years, which number some ten lustres. ONLOOKER.

AMERICAN COLLEGE STUDENTS.[1]

THE substance of this book appeared originally in the *Glasgow Herald* and attracted widespread attention at the time. The book is written from the point of view of a Scottish graduate, and is specially directed to assist in the solution of the many problems that surround the future development of Scottish universities. But the clear, comprehensive, and illuminating account of the history, administration, ideals, and aims of the leading American universities is well worthy of the careful consideration of all interested in university education. Mr. Risk has an eye for essentials, and while not neglecting details succeeds in presenting a remarkably life-like picture of the American student and his *Alma Mater*.

There are at least thirteen great universities in the States, and *spaciousness* is said to be the most outstanding feature in each. "One gets quite away from the idea of a university as a place of cramped quadrangularity." The area of the ground upon which the main buildings stand—usually known as the Campus or "lay out"—is about seventy acres, while the athletic fields will occupy other seventy. The university session runs from September to June, and is divided into two semesters, or terms of four months each, with a break of four weeks in between. Chicago alone runs its university all the year, "thereby insuring itself against the depreciation of the plant through disuse." The principle of electives in courses has been carried to extraordinary lengths in the States, one Western university offering no fewer than 666 courses to the be-

[1] "America at College." By Robert K. Risk. xiv+214 pp. (Constable.) 3s. 6d. net.

wildered student. According to Mr. Risk, there are signs that "they are gradually recovering from an uncontrolled debauch of options."

The extraordinary expansion of the American universities is due to the almost limitless resources that they have behind them, a public university sometimes receiving in one year a special grant equal to the total income of Glasgow University (£70,000). Everything that goes to making up the life of a university, both on its academic and residential side, will be found detailed here with a wealth of illustration and example, and with a lightness of touch that makes the book live from beginning to end.

The American student takes apparently a very limited interest in academic distinctions, and even more than with ourselves gives the palm to athletic and social prominence. Here, for example, are the "university honours" of a student, as printed in the class list of his year: "Freshman Glee Club; Smoker Committee; Athletic Committee; Senior Reception Committee; Social Committee; Class Football Tea." In the same book the name of the ablest student of the year passes absolutely without comment.

Co-education is not favoured by the average American undergraduate. Where it exists the male student "cultivates an attitude of aloofness and indifference towards the woman student." The effect of college life upon the inclination of women to marry is discussed with much intelligence, and in this connection Mr. Risk tells a story of an eminent lady president who, addressing a mixed audience on this question, said: "In the college which I have the honour to represent, during the last twenty years over 40 per cent. of the women graduates have married and over 60 per cent. have had children." Needless to say this somewhat ambiguous declaration was received with shouts of laughter.

THE STORY OF THE RENAISSANCE AND AFTER.[1]

WE have already noticed the first volume of Dr. Sandys's remarkable book, which, with admirable despatch, he has now brought to a conclusion. The reader is amazed by its innumerable marshalled facts, names, and dates: the labour of its compilation must have been enormous, considering that it ranges over the scholarship of many countries and books written in many languages. Dr. Sandys has had to include in his purview Russia, Denmark, Sweden, and Norway: if we may not suppose him to be conversant with all these languages, he has at least dipped into most of them.

The story of the Renaissance never grows stale; those were great days when any moment might bring a new classic to light, and when there were no American millionaires. The most important personages of the time, Petrarch, Boccaccio, Chrysoloras, Poggio, Lascaris, with their services to scholarship, take up a great part of two chapters, and emerge from the collected facts much more like living beings than one would expect in a work of this sort. We also meet with the first great schoolmaster of the Renaissance, Vittorino da Feltre, whose face (p. 54) gives a strong impression of keenness and sensitiveness, in strong contrast to the shrewd, twinkling eyes of his master, Guarino. He is, indeed, more Greek than Italian to look at. Erasmus has a chapter to himself. The great printers are not forgotten in the story, and indeed there was no danger of that when printers were scholars. But it is useless to go on mentioning names; everyone is here, in his place.

With the third volume Germany begins, and henceforth she absorbs a large place in the history. There is something noble in the story of the early German scholars, who in poverty and hardship worked their way to knowledge, each adding his stone to the great building that they built in common. Such men are not made by Carnegie bursarships or competitive scholarships. The story is brought down to very recent times, living scholars being apparently excluded: a few recently lost are mentioned in the addenda, among them, *valde deflendus*, Walter Headlam. A brief retrospect ends the last chapter.

The work is adorned with a large number of portraits; it has a select bibliography, an excellent index of thirty-eight pages, and useful reference tables illustrating the history of scholarship. It is extraordinarily interesting to read for anyone who is in sympathy with scholarship: we see, indeed, as Dr. Sandys says, the *imagines maiorum* brought out in triumph, and we feel proud if we can claim part in the procession as foot-soldiers or even *mutae personae*.

[1] "A History of Classical Scholarship." II From the Revival of Learning to the End of the Eighteenth Century in Italy, France, England, and the Netherlands. III. The Eighteenth Century in Germany and the Nineteenth Century in Europe and the United States of America. By J. E. Sandys. xxx+498, xiv+524 pp. (Cambridge University Press.) 8s. 6d. net each.

THE TEACHING OF HISTORY IN SECONDARY SCHOOLS.[1]

THE circular (No. 599) and accompanying memorandum on the teaching of history in secondary schools, which have recently been issued by the Board of Education, should open a new era in the treatment of the subject. Certain principles and methods which as yet have only timidly and partially been followed in a few enlightened schools have now received the imprimatur of official authority, and will in consequence enjoy a much wider vogue in the future. It would be too much to hope that they will at once meet with universal acceptance in all types of secondary schools, for even as regards the schools working under the regulations of the Board it is only a general guidance that is offered; the Board has wisely abstained from proposing any rigid scheme that might be adopted

[1] "Teaching of History in Secondary Schools." Circular 599. (Wyman.) 1s.

perforce without that full appreciation of its educational value which could alone secure its profitable use. For some time to come, no doubt, it will only be on ground that has been already prepared that the good seed will bring forth abundantly, but the leaven is bound to spread, and must sooner or later affect even the independent schools. Prejudices will die hard, and unintelligent routine will be only slowly driven out of the field; but we may trust that this is the beginning of the end, and that history is about to be finally instated in the rank of secondary-school studies from which a genuine discipline may be drawn.

While there are many luminous suggestions in the circular, there is one in particular that is of the highest importance as affording the sole condition on which all the others can be carried out. It is clearly shown that much which is at present taught to children under the name of history must be thrown to the winds. An end must be made of the superstition that everything which is of importance in the record of the past should on that ground alone be brought to the notice of youthful scholars. Not only in the preliminary teaching offered to those within the elementary age, but also in the systematic courses followed during the years from twelve to sixteen, it is boldly recommended that the material should be chosen freely for its natural appeal to the understanding and interest of the learner, on the unassailable ground that the study of anything which does not fulfil these conditions not only crowds out what is valuable, but tends to create a lasting distaste for the subject.

It is only when the ground has been cleared by the ruthless exclusion of all that is unnecessary or premature that opportunity can be found for dealing with the really suitable material at sufficient length to produce a vivid and permanent impression. That there is a crying need for such a simplification is clear enough from the fact that in one of the best recent school histories of England of the current type the number of characters mentioned by name amounts to no fewer than 1,300! Can it be doubted that there would be infinite gain if young people were made acquainted with only a fourth or a fifth of that number, but were able to learn enough about these to grasp their significance intelligently and sympathetically? The truth is, the teaching of history has in recent years come too much under the tyranny of professed historians, who, from a pedantic zeal for exhaustive thoroughness, have allowed educational considerations to go by the board. We welcome this authoritative assertion that in the teaching of history to immature learners, as a component of a general education, the attempt to compass more than can be made a lasting and fruitful possession will render the study worse than useless.

The circular usefully points out that it is not only by the omission of what is unsuitable that time may be secured for a more satisfactory acquaintance with the outstanding persons and events that come within the range of the learner's interest and capacity; by a more careful and complete correlation of studies the lessons in literature and composition, in geography, language, and drawing may be made to supplement the history teaching without any sacrifice of their own aims, while the encouragement of home reading may be directed to the same end. It is also a prominent feature of the suggested scheme that the activity of the pupils should be more fully engaged than has hitherto been the case. This activity has been too often limited to the memorising of facts and names and dates; it is proposed that every opportunity should be taken of bringing more varied and independent energies into play. Illustrative maps and plans and models should be constructed by the pupils for themselves and for the benefit of the class; historical libraries and museums should be formed to which the pupils contribute; there should be practice in note-taking, in summarising, in consulting authorities, and oral and written descriptions and discussions should be a regular part of the work.

On the general question of method, sound advice is given. The merits and defects of the "periodic" and "concentric" plans are impartially weighed, and account is taken of the interesting and plausible proposal, which finds favour in some respectable quarters, that the chronological order of events should be inverted, the lessons beginning with the present time and passing back to less and less familiar ages. There will be general agreement among aducationists that the safest path is the *via media* which is suggested. Concentration on a limited period should be approved only at an advanced stage of the school course, but the extreme attempt to cover the whole area more or less completely in each successive year is to be discouraged. The natural order of time should be followed, but a general outlook over the whole field should be made possible by tracing lines of continuity with the work done at earlier stages and by constant comparison with the situation of affairs at the present day. In this connection it is perhaps to be regretted that no more direct encouragement has been given to a general but systematic study of existing political and social institutions, such as is now afforded in a good many schools by a short course in civics.

A needful warning is given against the practice, now too common, of practically confining the study of history in schools to the annals of our own country. It is pointed out that the stories which should form the sole history teaching up to the age of twelve ought to be drawn from all sources, ancient and modern, and that even between the years of twelve and sixteen, when attention will be naturally devoted in the main to British history, every occasion should be sought of connecting the events in this country with important European movements and with significant tendencies throughout the civilised world. But if in this and other ways the field of

vision is to be enlarged, on the other hand it is recognised that there is a high value in cultivating the habit of observing closely what lies nearest to hand. Any tendency to the dispersion of interest in a wide cosmopolitan outlook is to be corrected by putting the leading features of local history in the foreground and developing so far as possible an individual appreciation of them. We have not yet fully realised how much may be done to stimulate the historic sense in children by leading them to study for themselves such relics of the past as may be found in their own neighbourhood, either in the form of buildings and other visible remains, or of customs and traditions. The revival of pageants has done much in this direction, and well-planned school excursions may do more. The most valuable suggestion in the circular in this regard is that, in the choice of episodes to be treated with some fulness, the teacher should give a preference to those which have the closest relation to that part of the country in which the school is situated.

Two other important matters receive the attention they deserve. Teachers of history are at present dominated to a large extent by the text-book and by the outside examination. It is certain that they might free themselves from any undue submission to these without suffering any penalty even in a utilitarian sense, but it is neither possible nor desirable that they should throw off such yokes altogether. If, then, the teaching is to follow the best lines, the text-books must be of the right kind, and the external examinations must be adjusted as completely as possible to the requirements of the position. Though much has been done of late years for the improvement of both, it cannot be said that any near approach has been made to the ideal. The references in the circular to these crucial points will be noted with interest and satisfaction.

The following extracts from the circular and memorandum will prove useful.

FROM THE CIRCULAR.

The first stage, which begins at the earliest age and ends at about the age of twelve, will consist almost entirely of stories. These should not be confined to stories taken from the history of England. The pupils should become familiar with the chief events and characters from the history of the most important nations in their traditional form.

Much of the historical teaching will best be given in the form of stories selected from suitable authors, such as Herodotus, or Plutarch, or the Mediæval Chronicles, or by reading books such as Scott's "Tales of a Grandfather." The story should be fully illustrated by plans and pictures of armour, dress, castles, &c., and the pupils should themselves be occasionally required to make plans and models. The pupils should be required to reproduce in their own words, both orally and occasionally in writing, the stories which they have learnt.

The work of these years should give centres of interest, round which the more formal historical learning of later years will crystallise.

The work of the years from about twelve to about sixteen is the most difficult to arrange. In nearly every school it will be necessary here to place a formal course covering the whole of English history from the invasion of the Romans to the present day. For this not less than three years is necessary. The work cannot really be done in less than four years, but it will not always be possible to spare so much time. The best arrangement seems to be to divide the course into three parts, in chronological succession, assigning one part to each year, and, if possible, to give one year to general revision, laying special stress on those matters which, owing to their difficulty, were omitted before.

ENGLISH HISTORY.—There are many periods and many subjects which present little that is of interest or instruction to younger pupils. Thus, in the earliest period it is not meant that, because a good knowledge should be acquired of the course and character of the successive invasions of the country and of the conversion to Christianity, any attempt should be made to trace in detail the struggles of the early kingdoms or to discuss the obscure and complicated questions of early English institutions. It will probably be desired to bring down the account of the colonial expansion almost to the present day, but it will not therefore be necessary to attempt to include the whole of the internal political history of the nineteenth century.

The first condition of good work is, indeed, the recognition of the fact that an attempt to give an equal and uniform knowledge of the whole of English history must fail. What should be aimed at is: (*a*) a clear apprehension of the general chronological sequence of the cardinal events; (*b*) a fairly detailed study of those parts or aspects of the history which are at each stage of the school course not beyond the comprehension of the pupils.

Generally, all difficult matters of constitutional history, which too often are presented to the pupils at an early stage, should, if dealt with at all, be reserved for the highest forms in the school, and it will be desirable to pass over with the very briefest notice those periods the history of which is merely a record of bad government, as, *e.g.*, the reign of Edward II., or those which are occupied with complicated and often squalid political intrigues, which, interesting and instructive as they may be to mature historical students, offer little that is useful to younger pupils. Generally, at each stage attention should be concentrated, not only on what is important, but on that the importance and interest of which can be made intelligible to the pupils.

There should be no attempt to learn all the names and facts which are mentioned in the ordinary school text-books. On the other hand, the treatment of some parts should be much fuller than is now usual, so as to leave in the minds of the pupils a vivid and lasting impression. This cannot be attained without an amount of detail which cannot be given if the pupils are expected to remember all parts of the history.

FOREIGN HISTORY.—The course must include in all cases such reference to and explanation of the chief events of European history as is necessary for the understanding of English history.

In this way it may be possible to remove the complete ignorance of any history outside England, which is now too common, without adding a separate subject to the curriculum, and to take the foreign history in such a way as to make the English history more intelligible and interesting.

Local History.—It is essential that in each school attention should be paid to the history of the town and district in which it is situated.

This will generally be best done, not by giving a separate course of work on local history, but by constant reference to the history of the locality as illustrative of the general history. This will take two forms. All great and important events which have taken place in the neighbourhood will naturally be chosen for more detailed treatment. General changes, whether political, social, or economic, such as the Roman occupation, the foundation and dissolution of the monasteries, the Norman settlement, the economic changes of the fifteenth or eighteenth centuries, the Reform Bill, should always, when possible, be explained and illustrated by reference to their effect on the particular district.

There must in all cases be included a study of those actually existent historical remains, such as castles, city walls, monasteries, which are accessible from the school, and in connection with this the study of the earlier periods must include some knowledge of the elements of architecture. It is far more important that pupils should leave school with their eyes trained to observe the historical remains which are to be found in almost every part of England than that they should attempt to remember the whole of the political history, much of which they cannot understand. In this co-operation with the art teaching may often be useful. For this purpose it is essential that the school library and museum should be well provided with books, plans, maps, and pictures.

Information as to the origin and growth of the chief industries of the place should be made accessible to the pupils.

Scope of the Course.—This programme of work, ambitious though it may appear to be, will not be impossible of execution if it is remembered that much of the information and many of the conceptions dealt with in history are dealt with in the allied subjects, especially in literature and geography. The information acquired in the one subject will be used in the other.

The work done in the last years of school will necessarily vary much. In classical schools it will be special study of ancient history, in others it may be the special study of some period of Continental or of English history. For those who are chiefly occupied with the natural sciences or mathematics it will often be best to finish the work with a course on the history of Europe in the nineteenth century, and on the working of the English Constitution considered with reference to its origin and history.

In these cases it is always desirable to take as the centre of the instruction some one or more books of high historical and literary merit. Whatever the conclusion of the course may be, it should not be merely the study of a school text-book. No pupil should leave school without having read some part of the writings of one or more of the great historians.

Text-books.—One of the chief values of the study of history is that it affords valuable practice in the use of books. The increase in the vocabulary, the study of the precise meaning, and, as the pupils become older and use larger books, the analysis and criticism of a well-written book are essential parts of their historical education.

It is, for this reason, important that the greatest care should be exercised in the choice of the book to be used. Generally, it may be said that no book is read so often and remembered with such verbal accuracy as the history text-book. It should therefore be a book which, both in language and style, is of a high standard, and slightly more difficult than a book which the pupils could read with ease alone.

A clear distinction should also be made between the book or books containing a well-arranged narrative and a book which is merely a chronological summary or compendium of facts to be used for reference. At least in the higher forms, both are required; the fault of many of the text-books in use is that they attempt at the same time to fulfil the two different functions, and the fault of the teaching is that the difference is not recognised. The constant use of a chronological summary and of books of reference is essential; perhaps the best form of teaching is to train the pupils to make their own chronological summary for themselves.

Written Work.—History should be used as affording practice in original composition. Questions and essays set to be done need not always be done under examination conditions, but should in some cases be arranged so as to train and test the power of using books.

There should be systematic practice in the taking of notes, graduated according to the age of the pupils.

General.—Constant use must be made of the map, and the school must be provided with good historical maps or atlases. The pupils should also make historical maps for themselves, which should be preserved in their note-books or in special map books.

In testing the knowledge of the pupils, the questions addressed to them, whether for verbal or written answers, should not be confined to those which can be answered in a single word or phrase. They should be of such a kind as to train the power of giving a connected narrative or explanation. The want of this, especially in oral work, is one of the chief faults of English schools.

From the Memorandum.

One of the chief reasons why much history teaching is so unsuccessful is that an attempt is made to teach too much. The number of facts, persons, events, mentioned in any ordinary text-book used in the middle forms is far greater than boys can understand, much less remember. If an attempt is made to remember them it results in a purely verbal memory of the words, names, and language of the text-book. This is worse than valueless, and makes boys hate the whole subject. In addition to this the amount of work to be got through prevents them dwelling with any detail on those events or ideas which would be and are interesting and instructive to boys.

In regard to constitutional history it is a useful rule always to draw attention to and explain the origin of all institutions which still exist. From the beginning boys should be trained to search in the past for the origin and explanations of the institutions and political life of the present.

The practical difficulty that we have to meet is examinations. History is always a most difficult and unsatisfactory subject to examine in well. The best work cannot always be made to tell.

There would, however, be a great improvement if in all examination papers on the whole or any part of English history questions were included which would encourage intelligent study of the foreign history within the limits here explained.

Papers set on the whole of English history should be so arranged as to give a fair choice of questions to be answered, and the questions should be so chosen as to encourage those who have a fuller knowledge of the most important events rather than a general verbal knowledge of a large number of names and facts.

THE FUNCTION OF SCIENCE IN EDUCATION.[1]

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IN calling me to preside over your counsels this year you have conferred upon me a grateful distinction, yet also a somewhat fearful joy. I am called to preside for a season over you who are concerned with nothing less than to create the next generation of our people, the makers of our England to come; yet of the methods and conditions of your work you know me to be ignorant. When you invited me to this chair you honoured me as an old teacher and servant of science; but you expected from me no expert assistance, and but a distant survey of your field.

In this bewildering age you may stand somewhat amazed; in this time of a new consciousness, of a ruthless analysis, of a sudden demolition and fumbling reconstruction of the whole framework of life, well may you call yourselves to counsel; for no longer can men walk peacefully and acceptably in the old ways. New stars have arisen, new paths have to be found across an untravelled world. And where, or in whom, are revealed the Moses and Aaron of this great adventure? Conservative every wise man must be; yet it is the wise man who knows that in a revolution, so sudden and so vast as this of the last half-century, the methods made for other conditions must have become defective; under conditions so new their very success in the past is against them for, as new needs are crowding in and must be satisfied, and new ideals are taking shape in our skies, our methods can no longer be measured by the old plans of observation. If our ends, in kind and even in vision, are immortal, deeper spiritual and intellectual forces are revealing and transfiguring social conditions; we are seeing them from other and wider points of view; we have come to another sense of our bearings. If then, partial and misty as our view still is, it is so much wider and lighter that we must build up a new social geometry on lines larger and more instantly efficient than that of our fathers, we shall not forget meanwhile that, if our fathers looked out from a darker world upon a narrower dawn, it was upon an intenser light and a nearer vision than ours, on a vision which in our diluter day becomes more and more remote, and the ruggedness of the way to it plainer and plainer. Yet this very narrowness and intensity may have irradiated their hearts with a hope, and drawn on their steps with a purpose keener than at first in our larger day we can compass, or even so ardently conceive. We know better where we are, it is true: we see more, and we can run after more; we perceive that science is freeing us from bondage to the elements of the world; but are we pressing forward as fervently on the line of promise? It is true that, as the throng is swaying onward upon the route, we are cutting and paving the roads better for them; but the engineer who maps and makes the road may be too busy by the way to regard the forerunners who, heedless of moss and rock, are crying to the multitude to cast aside every weight, and to race forwards only to the light. Still both prophet and engineer are needful to us; if we may not forget the vision or the race, we shall also regard pitifully the weaker brethren and the children whom the more material labours of the engineer are saving from bruises and falls by the way.

[1] The presidential address to the Association of Public School Science Masters on January 12th, 1909.

Now if this is all metaphor my oration and your time are being wasted. While I may occupy your attention, I would do so as directly and as economically as I know how. But I am speaking to the creators of the next generation of Englishmen, and I ask if it is not for us men of science a straight and a businesslike inquiry to ask ourselves how far we are engineers, or how far we are prophets; or again, if, while we are bending our eyes to the road, we can still see the vision in our hearts? The engineer is, we confess, a less picturesque person than the prophet, how far he may be a smaller person we shall try to see presently; meanwhile we must acknowledge that the territory of science is a new colony, and new colonies are sadly lacking in the finish, in the mellowness and harmony, of the ancient homes. It happens that the greater prophets of classical education held a similar meeting to ours but a few weeks ago; we must see to it then, we colonists of science, that in this respect we strive to approach the standard they set, for the minor brethren, of ripe and various wisdom, of flexible and precise intelligence, of seemly and finished discourse.

Confessedly then, we are here to-day to represent but one part of education, a great part it is true; but because we are men of science, men especially trained to observation and comparison, it is our advantage in the special counsels of to-day that we are trained to know, better than the prophets always know, not only what part we ourselves have to play, what faculties of the child are ours to develop, and what part of the child these faculties are, but also what conditions other than ours are likewise necessary for the completion of the growth of which he individually may be capable.

Let us try then to sketch, however slightly, our conception of these diverse functions and ends. The home and the school should develop the service of the child, the imagination of the child, his intellect and his ethics—categories, you will say, grievously unscientific; but, as science has won little way in these regions, we must be content with convenience.

It is claimed for the public schools of England that, if they do not make brains, they make character: a noble claim.

The ethics of the boy cannot be discussed in a few words; suffice it to say I am Pelagian enough to hold that the normal boy is in a stage not immoral but non-moral. "If I had not spoken to them, they had had no sin." His responsibility has scarcely begun; his moral is in part natural, in part derivative, imitative. Morals cannot yet be explained to him scientifically; the help of science to ethics will be recognised later, not perhaps before the boy leaves school; but if, thus directly, science cannot explain to the boy moral ideas, does it meanwhile reveal moral sanctions, does it inculcate moral habits? It cannot be denied that if a scientific training does not generate the passion for righteousness, by its ordinances these aspirations are directed and fortified. In science the boy begins to apprehend that the laws of his country are the fallible forerunners, but partake of the nature of the invariable sequences which we call laws in science; and perceives that freedom consists in knowing them and following them—that *servare est regnare*. In science he learns that sin and error is no mere personal vagary, no squall within himself only, but that every deed, good or ill, and every lightest word, counteracted as they may be, yet carry forward their indelible account. Science inculcates that he must have not only ardent aspirations and visions but that he must abound also in knowledge and in all judgment, to approve the things which are

excellent; and that, if it be not itself the wind in his sails, it provides the chart and compass of the ship. I think we must consent that, until the conceptions of modern science had permeated us, we had no full sense of this unity of society, nor of our duty to our neighbour. It is by science then that we are appreciating this infinite effect of every word and deed; and perceiving that, as now the survival of the fittest has become an emulation not of individuals but of social groups, it is the most coherent groups which will govern the earth.

Again: it is often said, and rightly I trust, that science inculcates the most noble of virtues, the love of truth. But truth is of two kinds; namely, on the one hand rectitude of intellectual conception and assent, on the other highmindedness and uprightness of temper. Now sagacity and honour do not vary together; sagacity is fostered by science, the scorn of falseness is sown and watered from other sources; but as teachers of science we declare that these virtues, if several, build and support each other: indeed that, without knowledge a passionate honour may be consumed in its own fires. May we not lift our eyes then to the hope that in science may be discovered the sanctions of simplicity, sincerity and brotherhood to chasten a swollen and luxurious age, such as in former times literature alone, even an Augustan literature, failed to regenerate?

By these reflections we are led on to inquire what we are meaning by science; what the subject contains, or what part of its content we have to-day to consider? It is clear, I think, that, even in the common use of the schools, we do not contemplate experimental science only: to do this would be to dismiss not only biology, which in boys' schools cannot be experimental,[1] but also the field of natural history which, in my opinion, is for most boys the best foundation of scientific training. Furthermore, Prof. Bury has lately vindicated the scientific quality of history; and, to take an instance apposite to our present theme, the modern theories which are transfiguring education itself, which are shedding new light on the ancient aphorism *Omne receptum secundum modum recipientis*, are for the most part born of science, and indeed of natural science. For the veer of custom, which for a time has been depriving theology and philosophy of their ancient claims to be sciences, is unjust; in science we must include the pristine idea of all orderly knowledge, of analysis of concepts, of whatever origin, for the construction of systems of affirmative propositions. The sources of religion are not science, they stream forth from mystery; philosophy likewise, in its technical sense, takes its birth in ideas which are metaphysical: but, as he essays to formulate the one or other, the theologian or the philosopher must remember that he then enters the domain of science, and, if not in respect of origins, must in respect of method submit to be judged by scientific canons. When therefore the theologian for example, filled with the mystery of his gospel, essays to formulate theological propositions, even if these by controversy be forged to a red heat, he renders himself notwithstanding absolutely liable to judgment at the bar of science, if not of science masters.

Now all this again I sincerely hope is not mere rhetoric: my purpose in it is to make manifest that science is far more than "natural science," which is a subordinate category of temporary convenience or custom; science—that is to say scientific method—penetrates, willy-nilly, into all the studies of the modern school, as it penetrates into all life. Indeed the spirit you represent more formally is even now within the citadel, and is assiduously at work upon the very vitals of the grammarian who, when he cannot refuse us, would ignore us. Not long ago I asked a well-known headmaster and distinguished grammarian how often he was seen on the "science side." His answer virtually was—Seldom or never. Is this the way to kindle the ardour of the average boy on your benches? Yet the historian, as we have heard by the mouth of Prof. Bury, is claiming our alliance, nay, is declaring himself to be of our kindred; lawyers, of the school of Maitland, are devoting their labours to put the law "upon a scientific basis"; geographers and archæologists are telling us that their study is being transformed by science: may I not fairly say indeed that there is no branch of education, or of the business of life for which it is to fit us, which science is not busily re-handling, remodelling and reinterpreting? *Natura, quam te colimus, inviti quoque.* This is not to say—far from it—that you, and the methods you and I represent, are, or are to become, sole masters of the human mind. The atmosphere of intensest creative activity extends as far above and beyond the gradual formulation of our ideas as the pairing and nesting of the bird transcend its individual intelligence. No doubt action may be sicklied o'er by too much thought, too much trust in analysis. *On commence à s'écouter trop.* And herein is engendered that distrust, reasonable and unreasonable, which the humanist has always felt of the scientist. The humanist winces to see the flower of literature stiffened into a diagram. Not only does he deny creative power to science, and with reason, but he suspects it of corrosive properties, and so is tempted to denounce all compact with it. Yet, when we leave the individual for the community, we observe that among both boys and men there are creative minds and analytic minds; but they are not antagonists. Or a study—let us say of the fifth century in Athens, or of the fifteenth in Italy—teaches us that supreme creative faculty may be contemporary with an analytic power, for its age and conditions, consummate.

It cannot be said that even the fine arts are, or ever have been, independent of scientific activity; and we cannot pretend that on the whole the ancient arts appeal to us as the modern arts, even of less beauty, inevitably must do. I am thankful to have acquired the taste for Greek and Latin literature; but when from it I turn to Goethe or to Wordsworth, in a moment I discover that the "classical" taste, though more than justified, is acquired; and that in the centuries between our own and the Graeco-Latin periods, the busy and revolutionary forces and ideas of science have, in spite of the humanists, so altered knowledge, taste, and the conditions of life that a satisfying love of classical literature is for us something of a make-believe. What is it then for boys, whose sense of time and development, relation and comparison, are rudimentary? I am carrying no war into the camp of an enemy; I am no warrior, I recognise no enemy: I am not marching science against the humane and other arts, but it is my vocation to-day to point out that as, in their date and degree, all human things fade, science is the organ by which we recover from them the principles of strength and beauty, and learn to adapt the newly won principles to new creations. This point of view is quite consistent with the pursuit of what is called "classical" culture, and indeed demands it; not as in itself education, but as a constituent of education.

It is still murmured, though no longer proclaimed, that boys are not of an age for natural science; that in boyhood admiration of lofty deeds and reverence and obedience

[1] It was pointed out in the discussions that botany may be experimental.

to lofty ideas are better lessons; that all questionings, all dissection of authoritative examples, should be left to adolescence. But, in no spirit of war but of concord, I would repeat to the grammarian, whose functions we do not seek to suppress, that even his lessons are in the main not literary but scientific; that they consist in analysis, and in systems of affirmative propositions and formulas; though as these are learned chiefly by rote and not by investigation, and are too often more logical than real, they fail to train the mind to openness, flexibility, and quest. Still here we are brought to consider the imagination, a precious endowment for which the Olympian schoolmaster says he is peculiarly jealous. Yet surely to literature in the sense of food for the imagination, few boys attain; but for their Homer this few would be a very few? When indeed I suggested to one great headmaster the importance of enlarging and warming the imagination of the boy, after a moment's hesitation he answered: "If I were to realise the need I do not know how I should go about to fulfil it." Thus in high quarters it was admitted that the "classical" studies are taught more on intellectual than on imaginative methods. If it be that at school the young imagination should be fostered, little is done directly to this end; although many means of doing it might be suggested. Certain tasks of rote might give place to bright and various pictures of great men and great adventures. Your association may then become paradoxically uneasy that the grammarian is, and always has been, too scientific.

But is the boy so far a creature of the imagination, is he at a stage when this faculty is at its relative best, and can best be nurtured, and on food more generous than natural science is supposed to be? We must confess that abstract science, like abstract grammar, is not a rich food for the imagination; though notwithstanding it imparts to the imagination a scope and virility which preserve it from rhetoric and sentiment. I was never able fully to consent with those champions of natural science who declare that its vaster theories, theories of celestial motion, of molecular motion, of life and the segregation of species, and so forth, inspire the imagination which they temper and edify. For me at any rate, these conceptions are not images, but infinite and tenuous abstractions. After too much of them I crave again for the first chapter of Genesis as an antidote. Moreover I suspect that the minds of few boys can be prepared even to entertain ideas of such scope and tenuity. But, on the other hand, I am not convinced that the schoolboy is, or perhaps that he ought to be, a predominantly imaginative animal, except in so far as imagination consists in ignorance of realities; or that he needs more imaginative food than he sucks incidentally from the noble traditions of his school, and the pictorial pages of Cooper and Scott. The healthy common boy should be outward bound, busy on the common range of wonderful visible things.

Compared with you I am a babe in these matters; but what strikes me far more about the British boy, generically speaking, is that he is a very matter-of-fact little person; very serious, very curious, and very handy. It is from his great example man that he may learn flippancy, satiety, mental inertia. In the boy nature is signalling to us rather to foster his seriousness, his curiosity, and his handiness. Now in our educational methods do we obey the signal? Do we foster this precious seriousness, or do we waste it? Do we encourage and feed this curiosity or do we so snub or disgust it that when the boy leaves school all or much of his natural ardour for knowledge is blighted? All masters must learn, what the science master can teach them, that, if by his own hands the boy can contrive no great art, yet it is immediately by promoting the activity and precision of his nervomuscular system that nature is building up not his practical brain only but also much of the hive of his mind—not to mention the congruities of bodily sanity. Here is then your boy in his age of innocence, with his wide-open eye, his almost fierce demand for the purest fact, his reiterating cry for the hows and the whys—and what do we do with him? Do we make his seriousness ours, or do we drive it out to his games? If only for the reflected effect on mind-making, do we let him build things? or after he has done his best with mud pies and sand castles, do we consign his dexterities altogether to football? Do we listen with alacrity to his incessant hows and whys? or do we tell him boys should not ask too many questions, and that logical and literary formulas, to him but fleshless bones, and, so far as he is concerned, of exotic origin, are his proper nourishment?

I do not forget that memory, mere memory, must be fostered; but boys enjoy reciting great lines, especially of the more rhetorical or heroic kind; and upon such recitations the memory grows far more vividly than by fagging up the dogmas of processes which he has never pursued. Nor do I forget that the duty of drudgery, even of much drudgery, has to be realised, a grievous but most necessary lesson; yet the boy will tolerate even drudgery if his seriousness is not fatigued, and if his eyes are lifted continually over the dry intermediate task to realise what he is to see at the end of the hard highroad. He must be led not only to do the right things but also to enjoy them; but to hammer in axiom upon axiom, as one hammers in nails, blinds his vision and wearies him until he may well say in his heart all knowledge is vanity.

The Cambridge freshman is not far ahead of your older boys; when he comes to us much formula has too often dulled his initiative, and quenched his keenness; yet in our physical laboratory it is a delight and an education to me to see how the seriousness of the boy, his curiosity and handiness have only been obscured, and that, although maimed and enfeebled, they can still rally to a bit of genuine personal research,—to adjust the angles of a prism for instance, to outwit the subtleties of a galvanometer, or out of doors to make some dreary bit of earth fascinating with a chain and a theodolite.[1]

Once more I protest I am no man of war; yet surely even on the "classical side" the seriousness of the boy, his curiosity and his handiness might be better cherished by a more comprehensive literary outlook; by the new history, the new archæology, the new geography; by museums and the like the "classics" are indeed becoming every day more and more of a living subject; but we are bold enough to claim that it is by science these changes have been wrought, and that, without leaving other studies undone, natural science, taught by masters who retain the keen curiosity of the boy, who are still as serious as the boy, and who can beat him in handicraft and research, is not only an integral part of education, but is eminently fitted to cherish his seriousness, to develop his curiosity into research, and to multiply his formative dexterities.

From these observations then we conclude not that the boy shall avoid altogether the discipline of drudgery, but, remembering he is not of an age, even in congenial subjects, to bear the strain of prolonged attention, that axiomatic and authoritative rote shall be administered to him

[1] I wonder by the way if there is a public school playing field in England which has been accurately surveyed and mapped by the boys?

sparingly, and blended as far as possible with matter not only more genial but such as may engage his own personal quest and adventure. It is a topsy-turvy education which begins with universals, and ends with a few particulars. Thus in learning languages, grammar should be administered in small doses, and by implication in story, as the child, when his curiosity begins to prompt him, swiftly and rather suddenly picks up reading in his own tongue. Above all things let our eyes be opened to the besetting sin of the schoolmaster, and to the devastating consequences of that sin, whereby the ingenuous and ardent curiosity and receptivity of the boy are deadened or quenched, so that too often in ideas he remains impoverished for the rest of his life. How this precious hunger can be fed by history, by heroic history, I have said in passing; but if it be true that there is in the boy a no less imperious natural call to be himself doing, to be exploring, and making, the great opportunities of natural science must be used. How can we honestly grumble that the boy cares for nothing but his games, which satisfy these good impulses, when we shut off all or nearly all his curiosity, adventure, and manual cunning from other and greater issues! But to this audience I have not to argue, I have only to vindicate for natural science a far higher and more intimate function, both educational and instructional, than is granted to it even yet. In natural history, wherein of course geology and physical geography are included, the boy nourishes his beautiful seriousness, for in scouting and collecting he is as serious as he is at cricket; his curiosity for the how and the why, by the ardour of his own discoveries, is fanned into a flame; and by these and other various crafts his brain is built and richly fed without intellectual dyspepsia or satiety.

I have betrayed, as you perceive, a little bias against abstract science for boys. Some mathematics must enter into the curriculum; but, generally speaking, my impression is that schoolboys are almost as incapable of abstraction as terriers. Still, in school, in spite of science, we are still apt to forget that there are boys and boys; a few boys have gifts which transcend all schemes of instruction, and some older boys can get no inconsiderable grip on universals; but for the many they are axioms nearly as dry as grammar; for most boys natural history and mechanics will prove more congenial than chemistry. Moreover in chemistry there is the danger lest the boy fall to imitating the test-tube routine of a master, or of a manual; schedule work which seems to me to be no mental training at all.

In the upper forms however, where numbers are fewer, there should be a more extensive differentiation than there is at present, according to the bents, and possibly even according to the vocations, of the pupils. You are aware of, and I hope you have welcomed, the trust the University of Cambridge and its Board of Medicine have placed in you by opening our first M.B. Examination to candidates on admission. We have done this chiefly that the student may be liberated for stages of advanced education more proper to a university;[1] but we have had also an oblique regard to the internal economy of the public schools; and this oration is in vain if I have not half persuaded even the headmasters that no boy's education is broad or even symmetrical which has contained less natural science than is required for our first M.B. Examination. For if I have spoken to any purpose this morning, it is that science is not a hobby, nor even a modern system of utilitarian ingenuity; it is a way of observing and interpreting everything, including religion. Indeed the arts and the sciences constitute the warp and the woof of the social web. In later life, after the general education of the school, most of us have to concentrate upon specific studies or crafts; but while I have pleaded for even more differentiation for the various boy than at present he has, I protest that to box off "science" artificially on a "modern," or any other "side," is to perpetuate an unnatural schism. An education which is not modern is an anachronism. Now the poor boy is stretched out between two mothers: "O, my lord, give her the living child, and in no wise slay it. But the other said, Let it be neither mine nor thine, but divide it." I do not then by any means desire to see headmasters more specifically scientific than linguistic; but he who is to mould a school should inspire it as a whole, and be in full and understanding sympathy with every part and function of it. If he knows only so much of science as to misunderstand it, or just to tolerate it, the educational mill will continue to throw out, to the right and to the left, batches of half-educated men, or am I too sanguine when I say half-educated?

[1] This Cambridge decision has little or no bearing upon the attitude of the General Medical Council concerning school teaching of physics and chemistry. Our curriculum is longer than five years, and we desire to pass forward the abler boys, already conversant with the elements of these subjects, to the advanced stages of bio-physics and bio-chemistry.

THE JANUARY EDUCATIONAL CONFERENCES.

January is the month of educational meetings of all kinds. So numerous are the conferences that we cannot attempt anything like an exhaustive account of the many interesting papers which have been read and the addresses which have been delivered. As in previous years, we must content ourselves with a brief review of a selection of the topics introduced at various meetings. We are able to publish some of the papers this month; and as opportunity arises we shall direct attention to others. Among the "Items of Interest" in another part of this issue, some of the more important resolutions adopted by various associations will be found.

Mathematical Teaching.

At the North of England Conference, Mr. T. J. Garstang, of Bedales School, considered the opinions of those interested in the teaching of mathematics under four aspects, the traditional, the practical, the logical, and the biological. Dealing with the question as to whether recent changes in mathematical instruction have effected improvements, he said it has been asserted that the recent changes have effected no improvement; some go so far as to state that results are worse. Much of such criticism can be admitted as fact; but it must be remembered that the new methods may not so much cause the apparent deterioration as provide occasions for the display of faults which were there all the while before the "passing" of Euclid, but which were veiled by the reproduction of a standard text, only too frequently learnt, but not understood. That criticism is just which points out that "practical mathematics," confined to mere routine, with empirical rules serving immediate practical purposes, is neither mathematics nor a necessary factor in education; criticism is just, indeed, which insists that in mathematics there is an element which transcends all the practical ends of the engineer or other scientific craftsman. But criticism is unreasonable which advocates a return to Euclid, or merely opposes changes of any kind, for "Euclid's definitions do not always define, his axioms are not always indemonstrable; his demonstrations require many axioms of which

he is quite unconscious." Where is the training for the reasoning powers on such a basis of unreason? How can we cultivate intelligence while we remain unable, because "unwilling to abandon the teaching of definite fallacies"?

At the same meeting Mr. H. Brotherton, of the Manchester School of Technology, dealt in an interesting manner with methods of teaching the use of the slide rule.

Higher Elementary Schools.

The position of the higher elementary school in a national scheme of education formed the basis of an important discussion at the North of England Conference. Prof. J. J. Findlay's paper contained many points worthy of the serious attention of educationists. No secondary school, he said, whether of old or new foundation, need really have cause to fear for its future if it is even moderately efficient. Schools in the north of England are nearly all full, and one hears on all hands that the same thing is true in other parts of the kingdom. Hence the anxiety properly felt in the 'nineties lest a higher elementary system should cramp the secondary system need be felt no longer. The existing secondary schools can hold their own, for they have found their proper *métier*, and they are supported by public opinion. The pressing problem of the next ten years is to instruct public opinion, to enlighten parents as to the meaning of different types of school. Assuming that the higher elementary school has a distinct field before it in our national system, how are we to assist parents and ratepayers to recognise its worth? Referring to the question of fees, Prof. Findlay said, without advocating the abolition of fees, so long as sufficient free places are allowed for those who cannot afford to pay, one might suggest that the fee might be returned after the school career to any scholar who has secured his leaving certificate and thereafter presented a testimonial of twelve months' efficient service in some public employment. The subject of specialisation in these schools was also considered, and Prof. Findlay stated that there is a large public opinion which would prefer to see higher elementary schools given over either entirely to technological or entirely to commercial pursuits. There is a vigorous movement in favour of trade schools, and here and there demands are made to establish commercial schools. This excessive specialisation seems to be a mistake, but if the choice were to be made it would probably be better to establish trade schools for our industrials and commercial schools for our commercials than leave the schools cut off from practical wage-earning occupations.

Co-ordination of Curricula.

The relation of the curriculum of the elementary school to that of the secondary school also received attention at the North of England Conference. Mr. J. W. Iliffe, of Sheffield, thinks that the primary school need not trouble itself about Latin, French, or algebra, but if it will give a good grounding in the elements of English grammar, taught so as to store the mind with the principles of grammar, the other languages can be much more effectively acquired at the secondary school. Unless pupils come to the secondary school with some knowledge of the terminology of grammar they are unable to begin the study of another language. If arithmetic is taught by good methods, and until a thorough mastery of mechanical working is obtained, the other branches of mathematics can be superadded at the secondary school. The accuracy of the work in arithmetic has much diminished during the last decade. Nor has this falling off in accuracy been compensated for by a more intelligent tackling of arithmetical problems. Indeed, there is obviously only small power of initiative and little ability to analyse the conditions of any given problem. As regards science, all that is required in the primary school is the formation of the habit of accurate observation; little more than nature-study, chiefly through object-lessons, need be taught at all. For these pupils, history and geography can be quite sufficiently well taught from the excellent readers at present in use.

Miss Cleghorn maintained that the "open door" from the primary to the secondary school is barely ajar, and can only be opened more widely by a better co-ordination of curricula, by a more hearty welcome to scholarship holders, by such improvements in the conditions of the primary schools as will lead to a better assimilation when the "bar" is crossed, by alterations in the methods of examinations, and by the growth of a more tolerant spirit and the casting off of the trammels of class distinction and differentiation. Thus might be realised, she said, the quaint prophecy of Langland, who 500 years ago wrote: "The child of a cobbler or a beggar has but to learn his book. He will become a bishop and sit among the peers of the realm, and the sons of lords shall bow down to him in spite of his origin and his parents."

The Teaching of History.

At the annual meeting of the Historical Association, Mr. Sidney Webb delivered an address on this subject. He said he made a very large claim for history as one great element in the production of culture. There is no substitute for history, in the largest sense, either in scholarship or even in literature. But there is history and history. When he was a clerk at the Colonial Office he learned with a shock that the little black scholars in the Government schools at Sierra Leone were actually beginning their history lessons by studying the names and dates of the Anglo-Saxon kings. When London University was reorganised he was much grieved that there was not a faculty of history set up, but he was wrong. He did not think, on further reflection, that history is a subject at all. What is wanted is the history of each branch of human activity—of chemistry, music, mechanics, botany, and so on; these subjects ought not to be taught without some knowledge of their history being also given. History would be taught best if it was attached to the study of the existing organisation of political society, and most meaning would be given to historical teaching if it was visualised as an introduction to and an explanation of England to-day.

Mr. H. A. L. Fisher, on the second day of the meeting, read a paper on the teaching of European history. He said his own impression is that the historical teaching in schools should be primarily biographical; that European history should be taught by the aid of some general text-book which covers the whole field, is illustrated, and expands by sketches the great characters in human history. These biographical sketches should be supplemented by geographical instruction, so that every pupil may have a peopled map of Europe. Either our public schools should engage specialists or else the ordinary teachers of history should be assisted by syllabuses prepared by specialists. Half of every hour given to the subject might be taken up by a biographical lecture, and the other half with questioning on the section of the text-book prepared. It is quite possible to take every pupil in a school through the main biographies of European history in a single year's course. A second year might be devoted to a course covering the same ground, but worked out in more detail, with the constitutional and political element emphasised.

After the general European course is concluded, some special course upon a great institution like the Holy Roman Empire or the Papacy should be given.

OPEN-AIR SCHOOLS.

The conference arranged by the London County Council was again this year a very successful gathering. The meetings lasted three days, and were chiefly devoted to subjects of especial interest to teachers in elementary schools, though there were matters discussed of direct usefulness to secondary-school teachers and to educationists more particularly concerned with administrative matters.

One of the most successful meetings was that devoted to teaching in the open air. At this gathering Mr. Lewis, headmaster of the Kentish Town Road School, London, described the experiments he has conducted in this direction. This work has already been described to some extent in these columns (vol. x., p. 248). Mr. Lewis said that among the special advantages of lessons in the open air there are obvious physical and moral gains to the child who spends at least one half-day per week in an open space. With the present schoolroom atmosphere the child associates books and the desk alone with the act of learning, whereas he should be ready to learn from the world at large. If it is granted that observation training is essential, and that nature provides the best material for observation, it is most important that the child's new interests should not be confined to small specimens which they can bring into or grow in the school. To reap the full benefit of nature-study, the children must be taken out into the field, where they may observe natural phenomena in their own proper setting. At the school over which Mr. Lewis has control, the greatest possible importance is attached to the annual long-distance school journey, the chief object of which is the swift pursuit of knowledge rather than the leisurely and thorough observation of natural phenomena.

VOICE CULTURE.

The important matter of the intelligent and effective use of the voice by schoolmasters and schoolmistresses was also considered at the London conference. Sir Walter Parratt, who presided when the subject of "Voice Culture" was under discussion, said that it is supposed that music can never be otherwise than beneficial, but the musician who knows his work understands there are ways in which music can be anything but beneficial. With regard to voice culture, the worst thing that a teacher can do is to make his pupils acquainted with their vocal mechanism, which is chiefly depicted by disagreeable pictures of vocal organs which the music pupil rarely understands, but becomes very conscious of. Few persons begin with voice exercises. Unison songs alone ought not to be sung; round music should be the foundation of part music. The proper use of the voice is the most healthy exercise that any human being can undertake, and the improper use of the voice is absolutely the worst thing.

Dr. Hulbert said that there is a scientific basis, which, if applied skilfully to voice-training, enables the voice to stand work, and, what is just as important, enables that voice to do its work in the most efficient manner. By the application of science the voice can be built up to a certain definite point, which can be expressed by the word tone. There is nothing that has a more beneficial effect upon the condition of the brain than scientific vocal culture. Health of voice means tone, and tone in health means perfect balance in the action of the mental, physical, and vital organs.

TRAINING IN DOMESTIC ECONOMY.

Great attention was given at the North of England Conference to the training of girls in domestic economy. Among other papers was one by Miss Ross dealing with the most suitable method of training girls for home duties. After a careful recapitulation of the work accomplished up to the present, Miss Ross said the ideal scheme would be one whereby the girl in the public elementary school devoted the last twelve months of her school life exclusively to training in domestic economy. All the time now given in earlier years to cookery, laundry work, and probably needlework, would then be available for the ordinary school subjects, so that the standard of general education would be no lower than at present. The entrance upon a new course of instruction at, say, thirteen years of age, when girls are most susceptible to new impressions and are often becoming a little tired of the ordinary school subjects, would give an impetus to the work of the whole school, and would undoubtedly induce a good number to remain at school until they were at least fourteen years of age. The drafting of a detailed scheme of instruction for such a twelve months' course is a task that would demand, and be worthy of, the attention of the best intellects. There are, however, some points upon which stress may well be laid. The course should include cookery, laundry work, needlework, the cutting out and making of garments, elementary dressmaking, simple home nursing, the care and feeding of infants, hygiene, some physiology, and expenditure of income. The teacher should have constantly before her the idea that she is engaged in training the future wives and mothers, and she should take every opportunity of inculcating the lessons of thrift, cleanliness, thoroughness, and method in the management of the house—also the cultivation of good taste in manners, dress, and in everything appertaining to the home.

ANTHROPOMETRY IN SCHOOLS.

Mr. M. D. Hill, of Eton College, read a paper upon this subject at the meeting of the Association of Public School Science Masters. Having given an account of the measurements which have been made at Eton during the past fifteen months, he said that the period had been too short for the data collected to be of immediate value; he urged, however, that if the practice became common and was continued over a number of years the results obtained might prove of the utmost importance. In the discussion which followed emphasis was laid upon the value of anthropometric observations in detecting slight physical abnormalities at a time when by suitable means they might be corrected.

SCIENCE IN GIRLS' SECONDARY SCHOOLS.[1]

By CHARLOTTE L. LAURIE,
Cheltenham Ladies' College.

IN discussing the principles which should underlie the planning of science in an ideal school curriculum, the first essential is to consider why science should form a part of the curriculum at all. It was not so thirty years ago, and there are some who think that the world went very well then, even better than it does at present, in spite of the improvement science has effected in our means of communication, in our greater comfort, and in our modes of thought.

[1] A paper entitled "The Principles that should underlie the Planning of the Science Curriculum in Girls' Secondary Schools," read at the annual meeting of the Association of Assistant-mistresses.

It may be urged—and not unreasonably—that to exclude science from the curriculum would be to bring up the present generation out of harmony with their environment. It is especially true of physical science in these days of motors, electric lighting, tubes, telephones, &c. To realise the full force of this argument, one has only to talk to some keen admirer of the good old times, who has refused to keep pace with modern life. Such a person is absolutely bewildered by our modern applications of electricity. He travels by the "tube" under protest, and only at the persuasion of a dearly loved friend; his house is not lit with electricity, but with sperm candles, a great improvement on the "dips" of his childhood, which were considered good enough for the nursery; of a telephone he never makes use, and he prefers for his kitchen the old make of boilers, which are filled by the kitchen-maid when she remembers to do so, instead of those self-filling inventions, which may be so dangerous in extreme frosts. Truly, to exclude physical science from the curriculum would be to incur a grave responsibility; such a course might have the effect of preventing the boys and girls now growing up from being able to take an intelligent interest in the everyday life of the future, when flying machines will have taken the place of motors, and the individual will be able to utilise the electricity in his own body at will, by some means at present unknown!

The main reason, however, for teaching science is to make our boys and girls familiar with scientific method. It would be difficult to calculate how many millions the nation loses every year for want of scientific method in its various departments. Just lately I have been reading the report of the Royal Commission on British Forestry and the evidence given by experts. It was stated over and over again that there was no reason why British timber, if scientifically managed, should not be equal to Continental timber, but our woodlands are being mismanaged through want of knowledge; one landowner after another complained of the difficulty of getting foresters who had any definite plan in their minds for the right development of the timber; there was no looking forward to the future of the woodland, but trees were thinned in a haphazard, happy-go-lucky manner, on no principle at all, the result being that our supplies of timber are irregular, and that our methods of forestry are a long way behind those of the Continent. The want of scientific method cost the nation much in the South African war; and it is only those engaged in secondary education who know the waste that there has been in many a child's life for want of some guiding principle in his early training.

What, then, is meant by scientific method? How far can it be attained in school life? It must be clearly understood that scientific method has nothing at all to do with the acquisition of facts; it is true that in gaining the scientific method a good deal of knowledge about things is obtained, but that is entirely by the way. To teach a child how to observe and how to reason, what conclusions to draw from the observations made, to correlate cause and effect, to generalise—these are the aims of the science teacher who is not cramming facts, but is developing the mental faculties. Accurate observation is obviously the first desideratum, for it is impossible to reason rightly until facts have been carefully noted. Children differ very much in their powers of observation, and all require the training of the senses which a well-planned course of object-lessons or of nature-study affords. In the kindergarten and lower school, then, the science lesson should be directed to this end—the cultivating of accurate observation. The common saying that you must only believe half of what you see is a testimony to the inaccuracy of most people's observation; not only is this inaccuracy of observation a great drawback in practical life, but it is a serious handicap in intellectual work of all kinds, not only in science. Possibly a good deal of the bad spelling of the present day, of the unscholarly work in languages, comes from a want of more accurate training of the eye.

It is a mistake to try to develop the reasoning power too early—to attempt to generalise from insufficient data. To do this is to be unscientific. For this reason, after the powers of observation have been cultivated either in the kindergarten or in the lowest classes of the lower school by such a subject as botany or zoology, in which the habits of plants and animals have been the basis of the course, some experimental course should follow in order to impress the necessity of accuracy and to teach the relation of cause and effect.

Such a course would be an introduction to physical science; it would include accurate measurement, exact weighing, and it should be connected with the work of the preceding years. At present the science courses of succeeding years are often disconnected. Supposing that the habits of plants have been the subject of the early courses, there is no reason why the first year of experimental work should not be connected with plant life. Seeds can be weighed in the dry condition and twenty-four hours after having been soaked; tips of roots and of stems can be measured; the amount of water in soil can be calculated; the properties of different soils, such as clay, sand, limestone, can be ascertained. All this might well form material for an experimental course, say, in the highest class of the lower school. Work of this kind would continue to train the habit of accurate observation; it would be developing the power of manipulation, and would afford opportunity for the simpler processes of reasoning. Thus, supposing a lesson has been occupied with the observation of dry and soaked seeds; it has been found out that soaked seeds are heavier than dry seeds; why? The children will answer, because they have taken up water; and then they are led to reason that water has weight. Most children hardly realise this unless they happen to have been carrying water. Again, by experiments children can find out that dry soil contains much more air than wet soil, that clay is impervious, limestone porous and sand still more so, and they will then be able to reason out which kind of soil will require the most water in their own little gardens. In developing the reasoning powers, it is important to graduate the difficulty of the conclusion to be drawn, and, above all, not to allow any attempt to generalise in these early stages.

More definite exercise in reasoning should be the work of the middle school—by means of a well-planned course of at least two years in physical science. The experimental work will now be more difficult—children will be taught to follow a longer chain of reasoning. In order to avoid confusion in the child's mind, the experiments chosen should, as a rule, admit of only one conclusion being drawn from each; the main point is to teach concentration, so that the child learns to carry in his mind two or three, and gradually more, facts observed, and to weigh them mentally before drawing a conclusion. The simpler the experiment and the simpler the apparatus used the better. Apparatus that is unnecessarily costly is a mistake from every point of view. In fact, the best experiments are those which, under the guidance of the teacher, are devised by the pupil, and the apparatus used so simple that it can be made by him at home. The right graduating of the experimental work is important. It need hardly be

urged that the pupils should perform the experiments themselves, and not merely attend a demonstration by the teacher. Fortunately, this is being insisted on by the Board of Education and by the universities. In some schools at the present time a course of what is called elementary science is given, including both physics and chemistry. There seems no reason why this should not work satisfactorily, provided that the course is experimental; but of these two branches of science some acquaintance with physics is imperative as soon as possible. The want of an elementary knowledge of physics is an immense drawback to the grasping of any other science, to the right understanding of even such a subject as botany. If physics has been taught to the exclusion of chemistry, then this latter should follow immediately.

By the time a pupil leaves the middle school he should have some idea of how to describe an experiment, how to draw a right conclusion from it, and he should be prepared to begin the work of generalisation by the science training given in the upper school. For this botany is well adapted, provided the teacher is always on the watch to prevent too hasty generalisation from insufficient data. In those schools where the leaving age is sixteen, pupils who have gone through a course of this kind ought to have some idea of scientific method and be able to attend with advantage technical schools or a post-school of domestic economy. One of the dangers of the present day is the providing of a technical education without ensuring a scientific foundation, and that is the reason why the British workman is distanced by his German competitor. In every calling there is a science as well as an art, a science of dressmaking, of cooking, of wood-carving, of carpentry, as well as the manipulative skill, and those who are ignorant of the scientific principles underlying their profession or trade cannot expect to reach the highest and most real success in it. The ignoring the science of education, the being content with practice in the art of teaching, has landed England, not Scotland, in the present state of chaos which it is admitted on all sides still characterises her secondary education, although there certainly has been considerable progress of late years.

In all our great public schools, pupils remain to the age of eighteen or nineteen: does the scientific education already sketched form a right basis for subsequent work? After such a course specialisation may be admitted, and whatever branch of science is now selected, the training in scientific method already given will prove invaluable. The report issued last September by the sub-committee appointed by the British Association to inquire into science teaching notes considerable improvement in the organisation of the studies of chemistry and physics throughout the day schools and public schools of the country; at the same time, it deplores a loss of enthusiasm, due, perhaps, to an over-exaggeration of practical work. The report quotes Sir J. J. Thomson's description of a student: "He commences his career by knowing how to measure or weigh every physical quantity under the sun, but with little desire or enthusiasm to have anything to do with them." To prevent this, the committee recommends lectures on evolution, geology, &c.

This suggestion, combined with some made by one of my colleagues at Cheltenham, leads me to put in a plea for what may be called an historical course of science specially suitable for the last year of school life and for those pupils who, for one reason or another, may not have had any scientific training. A knowledge of scientific method, and what is meant by it, should form part of the mental equipment of every well-educated boy and girl. For instance, in an historical course, it would be natural to give some account of Bacon's work, of the emphasis laid by him on the inductive method, necessary for all real progress in science; some sketch of the discoveries due to the inductive method would then follow. Similarly, the work of Priestley, Newton, Darwin, Kelvin, Mme. Curie, and of many others would form a most interesting course for the last year at school. Lectures of this kind would be illustrated by lantern-slides and the original experiments, where possible, in order to show what it was that suggested the idea which led to the discovery that in some cases may be said to have revolutionised thought; thus interest and enthusiasm would be aroused.

Such a course might well form part of the curriculum of the classical side of a great public school, and would be specially welcome as a refreshing change from purely linguistic or literary studies. Our boys and girls should not leave school ignorant of these great pioneers in the scientific world, whose labours they inherit and to whom their own special studies are largely indebted. The present method of study in literature and in history is largely due to Darwin's influence—the study of development of a poet's mind, of a country's institutions, of theological beliefs, is a witness to the hold which his presentation of the theory of evolution has had, and is still having, on the world of thought. It is possible that a course of this kind would create an interest in ideas as ideas. The tendency of almost exclusive practical work in science is to make boys and girls impatient of abstractions; yet the power of grasping abstract ideas is essential to higher thought. Scientific lectures to older pupils, who have done at least two years' practical work in physics, would tend to adjust the balance and to keep alive that interest and enthusiasm without which any study becomes wearisome.

The report of the British Association committee concludes with emphasising the "need of inspiring and well-written books on scientific works and achievements. What is wanted is a scholarly literature of science, not a stream of elementary text-books." There is no doubt that teachers should encourage more reading on the part of students in order to maintain enthusiasm, which is kindled and supported by the knowledge of what is being done in the field of science. No education can be considered satisfactory unless it leaves a student keen to know more of subjects which during school life have necessarily been merely begun.

HISTORY AND CURRENT EVENTS.

IN these days, when even Russia and Turkey have parliaments, and Persia and China are struggling with similar problems, it would be difficult to say who is the most autocratic ruler in the world. The question occurred to us in contemplating recent events in the German Empire and the United States of America. Both these States are confederations, unions, for certain purposes of government, of States which before the union were sovereign and independent. Both have Presidents. Germany in 1871 gave that position to the Prussian kings, who thus, though originally chosen, hold the presidency by hereditary right, in the same way as Edward VII. holds his crown under the terms of the Act of Settlement of 1701. The United States choose their President every four years, and the man chosen is only Mr. ——, not Emperor. Yet which of them is more independent of his Parliament and his Ministry? Ask von Bülow and Mr. Roosevelt which can least be called to order for his "messages," William II. or the elect of the citizens of the Western Republic.

LAST month we directed the attention of our readers to the smallness of the part which the House of Commons plays in the legislation of the country. But even as we were writing, Bills were being discussed in that House, and the Ministers "in charge of" those Bills were accepting amendments to the measures that they were proposing. There would therefore seem to be reason for modifying our insinuation against the power of the House. Yet how unusual this is, and how it lessens the prestige of a "Government" to permit such alterations in the legislation it has proposed, may be seen from the protests that generally follow such acceptance. "They do not know their own minds" is a favourite taunt, or "the Government has yielded to pressure as it always does," as Mr. Markham remarked last December *à propos* of the Coal Mines Bill. Thus a strong Government, one which hopes to last, must legislate, and the duty of the House of Commons is either to accept its Bills as they are or to eject the Government.

WE have not yet escaped from the Hallam tradition in our study of the seventeenth century in England. We are still told by the writers of our text-books that the struggles of that period were political, but that they were distorted by religious parties. Some day even our school children will be taught that the whole of the Stuart controversy was religious in its basis, even when the points discussed were financial or constitutional. The whole system of the Church of England was being discussed. Theological and ritual questions were in debate as well as forms of Church government. When this is understood, the right proportion of space will be given to the ideas of those who thought that a compromise could be effected between the Presbyterians and, on the one side, the Episcopalians, and, on the other, the Congregationalists. Then the true importance of New England history will be understood, and we shall hear as much of John Eliot's ideas of their form of Church government as we now hear of his missionary work among the Indians or of his namesake's work in the English Parliament.

WE have been led to these reflections by news from Canada. We know how the members of non-Established Churches in England and Scotland have of late years been drawing together into federations, and even in some cases into still closer unions, and now we understand that the Presbyterians, the Methodists (who are Presbyterian in their form of Church government), and the Congregationalists of Canada are far advanced in a scheme of union. Thus in the twentieth century, after the internecine wars of the seventeenth century and the dull apathy of exhausted combatants in the eighteenth, we are beginning to appreciate the true importance of rival schemes of ecclesiastical constitutions. The modern representatives of those old enemies are finding, as so often, that they are right in what they affirm, wrong in what they deny, and that the truth, or rather what truth is practically important, lies between the two positions that were formerly regarded as mutually incompatible.

Intuitive Methods and the Teaching of Modern Languages. By F. Burtschi. 20 pp. (Browne and Nolan.)—In this pamphlet Mr. Burtschi pleads warmly for the direct method, expressing in clear language views with which all reform teachers will agree, but which are no longer novel in this country. Still, there are many who yet need to be convinced, and every effort is welcome.

ITEMS OF INTEREST.

GENERAL.

AT the meeting of the British Association to be held at Winnipeg from August 25th to September 1st next, the Rev. Dr. H. B. Gray, Warden of Bradfield College, will be the president of the Educational Science Section. The Recorder of the section this year is Mr. J. L. Holland, Education Offices, County Hall, Northampton.

IN our last issue we directed attention to some of the proceedings at the annual meeting of the Headmasters' Conference. It will be of interest to readers to learn that the following resolutions were adopted eventually: (i) (*a*) That this conference is of opinion that, in the formation of a Registration Council under the Education (Administrative Provisions) Act of 1907, representatives of the teaching profession should be chosen with reference to the types and grades of existing schools, and not with reference to the several faculties of teachers; (*b*) and that this conference trusts that the Board of Education will take steps to facilitate the constitution of such a council without further delay. (ii) That the emoluments of entrance scholarships should be of two kinds: (*a*) *general*, of comparatively small value; (*b*) *special*, depending on a definite statement of inability to send a boy without such assistance. (iii) That this conference, while withholding its assent to many details, and in particular to the proposal to postpone the study of Latin to the age of twelve, approves of the main conclusions of the Report of the Committee of the British Association, Educational Science Section. (iv) That in view of the important change which has taken place in the *status* of the School Cadet Corps, the committee of the conference be asked to appoint a subcommittee to deal with such questions as may arise in that connection and in connection with the support and development of school rifle clubs, and that the subcommittee be authorised to invite the co-operation of officers commanding school corps. (v) (*a*) That, in the opinion of the conference, the average boy cannot undertake the study of more than two languages besides English before attaining the age of thirteen years without detriment to his general education; (*b*) that, as experience shows it to be possible for a boy to attain a high standard of Greek scholarship by the age of eighteen or nineteen, even though he may not have begun Greek until fourteen, or even considerably later, it is the duty of public schools to provide a class or classes in which the study of Greek can be begun. (vi) That a committee be appointed to confer with the preparatory-school masters as to a scheme of studies for schoolboys from the age of nine until about sixteen, and to draw up a report on the subject. (vii) That the standard of the school certificate examination conducted by the Oxford and Cambridge Joint Board is too high for the purpose for which it was intended, and that the committee be instructed to approach the Joint Board on the subject. (viii) That this conference views with regret the apparently increasing neglect of the study of German in secondary schools.

AT the annual general meeting of the Association of Headmasters, held at the Guildhall, London, on January 12th and 13th, and attended in State by the Lord Mayor, the following resolutions were adopted: (i) The association is of opinion that with regard to the free places (now required to form 25 per cent. of admissions), when the total number of free places in a school amounts to 25 per cent. of the whole number of pupils, it should not be necessary in subsequent admissions to throw open 25 per cent. of the admissions, provided always that the 25 per

cent. of free places in the school is kept up; and that where the percentage approved by the Board of Education is less than 25 per cent., the same principles should be applied to the smaller percentage. (ii) That this association instructs the council to take such further steps as may seem good to it to bring about a plan of registration in concert with other educational societies willing and qualified to co-operate, and is of opinion that no efficient registration council can be formed which is based on particular subjects of teaching rather than on the general type and grade of the education represented. (iii) That this association take steps to secure an adequate scheme for the superannuation of masters in secondary schools, in conjunction with the Association of Education Committees and other bodies. (iv) (*a*) That the association regards with approval attempts made to remove the inconsistencies of grammatical terminology which confront a young student who has to deal with several languages simultaneously. (*b*) That this association recommends the council to take steps to meet the Classical Association, the Modern Language Association, and the English Association to formulate a scheme of common terminological usage on definite lines. (v) That this association is of opinion that the time has come when the representation in Parliament of teachers of secondary schools should be secured. (vi) That this association welcomes the report of the Classical Association on the pronunciation of Greek. (vii) That in the opinion of this association (*a*) the salaries offered in connection with headmasterships of secondary schools have in several recent cases been utterly inadequate; and (*b*) that the council be instructed to take action in the matter.

The important question of the relation between the supply and demand of qualified teachers for elementary schools was discussed at the annual meeting of the Training College Association, which took place too late in December to be noticed in our last issue. Mr. Spafford, principal of the Darlington Training College, moved the following resolution, which was carried unanimously: "That the attention of the Board of Education be called to the fact that a large number of the students in training colleges who completed their training in July last are still without employment, and that in the prospect of a further large increase in the number of training colleges this condition is likely to be intensified considerably unless the Board of Education or the education authorities devise means to secure a larger proportion of trained teachers in the schools." In moving the resolution, Mr. Spafford said that of the 740 students who left the men's residential colleges in July, 81 were still out of employment; of 1,960 who left the women's residential colleges, 418 were out of employment; and of 1,064 men and women who left the day training colleges, 352 had not secured any appointment. Moreover, many of those who had taken appointments had taken those of uncertificated teachers at uncertificated rates of pay, instead of appointments as certificated teachers. In his twenty-five years' experience no such condition had ever arisen previously. Since 1900, training college accommodation for women had been doubled and more colleges were projected. There is little doubt that the probable future of young men and women adopting the profession of teaching in elementary schools should be faced squarely by the authorities. Either additional funds must be provided to make it possible to employ trained and certificated teachers in place of the large number of acting teachers who at present have no certificate, or else there should be some restriction put upon the numbers permitted to enter training colleges for a course of training.

At the annual meeting of the Association of Assistant-masters in Secondary Schools, held on January 8th, at St. Paul's School, London, the following resolutions were adopted: (i) That in the opinion of this association no assistant-master should sign an agreement—(*a*) if it provides for the possibility of his dismissal at any time other than at the end of a school term, except after at least two months' notice has been given him, save in case of grave misconduct; (*b*) or if it does not provide that, before the dismissal takes effect, the assistant-master concerned shall be given the opportunity of appearing, with or without the help of a friend, before the governing body in his own defence. (ii) That in the best interests of secondary education it is imperative that the Board of Education should take all necessary steps for the early establishment of a superannuation fund for teachers in recognised secondary schools. Such a scheme should provide for—(*a*) contributions to the fund from the teacher and the governing body; (*b*) the expenses of management to be borne by the State; (*c*) the provision by the State of a disablement allowance; (*d*) the possibility of the teacher migrating from school to school without loss of pension rights. (iii) That this association deeply regrets the withdrawal of the Headmasters' Conference from the Federal Council. (iv) That the association instruct the executive committee to move the Federal Council to take such further steps as may seem good to it to bring about the formation of a registration council in concert with duly accredited representatives of other bodies desirous and qualified to co-operate. (v) That this association approves of the scheme for the pronunciation of ancient Greek formulated by the Classical Association, with preference for the pronunciation of *ει* and *η* as close and open *-e* respectively, for that of the aspirates *φ*, *θ*, *χ* as *p*, *t*, *k*, followed by a strong breath, and for *υ* like German modified *ü*.

The annual meeting of the Association of Assistant-mistresses was held on January 9th in Dr. William's library, Gordon Square, London. The chair was occupied by Miss E. M. Bancroft, Redland High School, Bristol, who was announced to have been re-elected the president of the association. A series of resolutions was passed declaring that (*a*) any pension scheme proposed by the association should be national; (*b*) it should have Government security, and all teachers should be eligible for it; (*c*) the retiring age should be fifty-five years, but the option of continuing work after that age should be granted if the governing body of a school should so desire; (*d*) the scheme should be compulsory; (*e*) the teacher's contributions towards the pension fund should be on a sliding scale, increasing automatically with increases of salary; (*f*) the scheme being compulsory, contributions or a certain proportion of them should be returnable in the event of a teacher's retirement before reaching the age at which a pension would become payable, but that no teacher with less than two years' service should receive any repayment; and (*g*) the *minimum* annual pension should be £50. Among other papers read and discussed was one by Miss Charlotte L. Laurie, Cheltenham Ladies' College, which is printed in another part of the present issue.

The annual meeting of the Geographical Association on January 6th was very successful. The morning was devoted to the reading and discussion of the following papers: "The weather report and the teaching of geography," by Mr. J. Fairgrieve; "Hints on hanging and storing maps," by Dr. A. J. Herbertson; and "Demonstration of the method of making models by serial sections," by Mr. J. A. McMichael. In the afternoon a general meeting was held. The report showed that the membership is now 793, having

increased by 250 during the year. Mr. Douglas Freshfield delivered his presidential address, Dr. H. R. Mill delivered a lecture on the rainfall of the British Isles, and Mr. G. W. Palmer gave a lantern exhibition of a set of views of the Dora Baltea. It was announced that the monthly meetings of the association in London had proved very successful and were to be continued. We are informed that the next meeting will be held on February 26th, at 8 p.m., at the North London Collegiate School, Sandall Road, N.W., when Mr. Douglas Freshfield will preside. Two papers are to be read: (i) "Pictures as an aid to the development of the geographical imagination" (illustrated by lantern-slides), by Miss Sophie Nicholls, of University College School, &c.; (ii) "The correlation of instruction in physics and geography," by Mr. W. Maclean Carey, of Rutlish Secondary School, Merton.

THE ninth annual meeting of the Association of Public School Science Masters was held at Merchant Taylors' School on Tuesday, January 12th. The proceedings commenced with a business meeting, at which Prof. H. E. Armstrong, F.R.S., was elected president of the association for the year 1910. The report of the committee states that the growth of the association during the past year has been most satisfactory, and practically all the public schools are now represented by the members. It was decided to hold a joint meeting with the Mathematical Association in January, 1910, to discuss the possibility of co-ordinating the teaching of science and mathematics, and a subcommittee was elected to confer with representatives of the Mathematical Association and the Association of Headmasters in Preparatory Schools as to the best means of promoting this much needed reform in our educational system. In the morning, the president, Sir Clifford Allbutt, took for the subject of his address "The Function of Science in Education," and this appears in another part of the present issue.

AT the afternoon meeting a discussion took place upon "The Science Curricula in Public Schools," which was opened by Mr. G. F. Daniell, who gave a short summary of the report of the British Association committee upon the "Sequence of Studies in Science." Mr. W. D. Eggar, of Eton College, read a paper upon "Geography, considered as a Science Subject"; whilst gladly recognising the improvement which has taken place in the teaching of this subject, he urged that we should try to introduce science into geography rather than geography into science. Mr. R. G. Durrant (Marlborough) maintained that the chief conclusions of the theory of ionic dissociation were incontrovertible, and should be explained to boys soon after they had been introduced to the atomic theory, a suggestion which drew from Prof. Armstrong the prophecy that in ten years' time the ionic theory would have disappeared from scientific thought! Mr. G. H. Martin (Bradford) suggested in the course of a short paper, which will be found on another page, that geology provided the most suitable introduction to those boys on the classical side of schools who only study science for two years. The refusal of the General Medical Council to recognise public schools as places in which medical education may be commenced has engaged the attention of the association for some time, it being felt unfair to grant recognition to technical schools whilst withholding it from the large public schools. Mr. C. I. Gardiner, of Cheltenham College, brought this subject foward, and the subsequent discussion proved that many schoolmasters, and even medical men, are in doubt as to the exact value of registration for medical students; the secretary of St. Thomas's Hospital went so far as to state that it is quite unnecessary, in any case; it is certainly to be hoped that all doubt upon so important a question will be removed from the minds of teachers and students alike.

THE annual general meeting of the English Association was opened in the botanical theatre at University College, Gower Street, on January 16th and 17th. The report of the executive committee for 1908 shows that the central body numbers 432 members, an increase of 148 during the year. The number of local branches in England has increased from three to six, the new branches being at Croydon, Newcastle-on-Tyne, and Yorkshire. The Scottish branch, which has been divided into seven local centres—Edinburgh, Glasgow, Dundee, Aberdeen, St. Andrews, Stirling, and Kelso—contains 237 full and 243 associate members. There are thus in all 881 full members and 410 associates, making a total of 1,291. The association has enrolled members in Germany, the United States, India, China, and New Zealand. Arrangements are in progress for co-operation with the Royal Society of Literature in the publication of works bearing on research in English language and literature, and in other ways hereafter to be suggested and developed. It is proposed to issue a joint publication in the present year. Details are at present under consideration, but the committee is glad to be able to state that Prof. A. C. Bradley has consented to act as editor for 1909, in conjunction with an editor to be nominated by the Royal Society of Literature. Prof. G. Saintsbury was elected president for the ensuing year.

THE annual general meeting of the Modern Language Association was held at Oxford on January 12th and 13th. Among the resolutions adopted, we note one welcoming the recent change in the Board of Education regulations for secondary schools, which allows greater freedom to schools in the choice of languages to be taught, and hoping that the Board will take further steps to encourage the study of German in secondary schools, was unanimously adopted. The presidential address was delivered by Lord Fitzmaurice. Prof. Lanson, of the University of Paris, speaking in French, delivered an address on the subject of "How Voltaire wrote his Letters on England." Prof. Fiedler gave an address in German on Goethe's "Faust." Mr. Otto Siepmann read a paper on some aspects of German education; an interesting discussion on the teaching of French and German to middle and higher forms was well maintained; and Mr. H. A. L. Fisher, of New College, Oxford, read a paper on "Our Insularity."

AT a recent meeting the Council of the Teachers' Guild considered the White Papers issued by the Board of Education relating to a scheme for a new Teachers' Registration Council. The formation of a register that should include duly trained and qualified teachers of every grade has been one of the main objects of the Teachers' Guild ever since its foundation. While conscious of the inherent defect which vitiated and eventually wrecked the old register—a radical error against which the Guild from the first protested—it was with regret that the Guild learnt the determination of the Government in 1906 to abolish the register instead of amending its constitution. The Council regrets also to gather from the published correspondence, and in particular from the last letter to Dr. Gow from the secretary to the Board of Education, that this is not the view of the President of the Board. In it the secretary speaks of the possibility of there being at some future time an official Teachers' Register, if and when proposals

are forthcoming for a Teachers' Council and Register which shall be representative of the teaching profession, and the constitution of which no substantial body of teachers shall look upon as involving any injustice. The condition now imposed, the Council points out, is not contemplated in the Act of 1907, and is one that it is impossible for teachers to satisfy. A council to which each separate body of teachers sent a representative would be, it is maintained, unworkable by reason of its numbers, and further, by reason of the disproportionate representation, it would not be truly representative of the teaching profession. The delegates who, at the instance of the Board, attempted the task have, in the judgment of the Board, signally failed, and decline to take any further action. The Council of the Guild suggests that the Board of Education is the only court competent to arbitrate upon rival claims, and that it is to the Board of Education that Parliament has assigned the duty of "constituting a Registration Council representative of the Teaching Profession." It has appealed to the President of the Board to take immediate steps for the issuing of an Order in Council under the Education Act of 1907. The Guild maintains that thus only can the grave injury that the teaching profession has suffered and is suffering by the suppression of the register be remedied.

THE Joint Matriculation Board, which conducts the Matriculation Examination on behalf of the Universities of Manchester, Liverpool, Leeds, and Sheffield, has issued a report on its work. The number of candidates in the July examination last year increased from 1,294 to 1,695, and in September from 438 to 519. The examination was taken in July as a form examination at twenty-eight schools, which provided 299 of the 1,695 candidates. As many pupils take the examination a year before they leave school, the Board now allows pupils holding certificates to present themselves in a limited number of subjects at the higher standard for supplementary certificates. Seventeen candidates took advantage of this regulation last year. The Board during the year recommended for the award of scholarships for the education committees of Lancashire, Cheshire, the North and West Ridings of Yorkshire, Manchester, Liverpool, Leeds, Salford, Southport, Blackpool, and Rotherham, and on behalf of the governors of the Heginbotham and Tetlow Foundation, and of the Scarborough United Scholarships Foundation. The Board also recommended for the award of a matriculation scholarship in the University of Manchester, of the Gee scholarships on behalf of the University of Liverpool, and of several entrance scholarships on behalf of the University of Leeds and of the University of Sheffield. On behalf of the education committees of Lancashire and of Cheshire, the Board conducted the examinations for the award of the senior exhibitions and intermediate scholarships offered by the respective committees.

SCOTTISH.

THE Education Department has issued a circular explanatory of the regulations for the training of teachers of higher subjects. Reference has repeatedly been made in these columns to the grave misgivings of the general body of teachers as to the effect of the regulations upon their status and prospects. We pointed out at the time that teachers were reading more into the regulations than was intended by the Department. The new circular amply confirms our view. Managers may appoint to a position in a secondary school any certificated teacher who has shown his fitness to teach a certain subject, and such person will be recognised as qualified by the Department without any reservations whatsoever. Existing teachers who have had no previous experience of secondary-school work may also be appointed to secondary schools, but their permanent recognition as qualified teachers of the subject will be dependent on a favourable report from H.M. Inspector at the end of a year's service. Emphasis is also laid upon the fact that the Department, in notifying teachers in regard to the position they occupy in the school, makes no pronouncement on the relative merits of teachers. The notification merely records the bare fact that a particular teacher is doing a particular work. The Department is to be congratulated on its recognition of the grave misapprehensions current among school managers and teachers in regard to the regulations, and on its well-timed efforts to remove all cause of misunderstanding or dissatisfaction.

THE thirty-fifth annual Congress of the Educational Institute of Scotland was held this year at Stirling. The weather conditions were probably the worst in the whole history of the institute. One of the English delegates from the National Union of Teachers was snowed up on his way north, and only succeeded in getting through after a series of blood-curdling, or rather blood-freezing, adventures. In Dr. Lowson, Rector of the Stirling High School, the congress had an ideal president. In his opening address Dr. Lowson struck the right note. "Their first and chief thought was one of thankfulness that at last they had an Education Act, and had—at least for a little—a respite from an Education Bill. Their second was that the new Act contained many provisions calculated to advance the cause of national education and to affect beneficially the interests of the teaching profession." This was well said, and all the more welcome because some subsequent speakers were rather inclined to reckon up what the Act did *not* give them. The papers read were of exceptional interest and have received very general notice from the daily Press. Special mention should be made of Dr. Smith's forcible plea for a national council in education, Councillor Lushman's able statement of the case for compulsory continuation classes, and Dr. J. G. Kerr's thoughtful address on health in school.

PROF. DARROCH'S paper on "The Universities and the Training of Teachers" was, however, the *pièce de résistance* of the congress. He brought forward for the consideration of the members present a brand-new scheme of training for teachers. This followed closely on the model of Teachers' College, Columbia University. Thus the present provincial training centres would gradually become purely professional schools for the practical training of the various classes of teachers, while all further instruction which students in training might require outside the professional course would be given in the universities. The university and the provincial centre (*i.e.*, the teachers' college) might issue a combined degree or diploma in education analogous to the degree in engineering issued jointly by Edinburgh University and Heriot Watt College. The proposals gave rise to an animated discussion, and much plain speaking was indulged in with reference to the scheme. Put shortly, the position taken up was that it would be a fatal mistake for the profession to cut itself adrift from the broad, full life of the universities and segregate itself as a class apart in any professional school. The university degree had a definite, tangible value. It was known and appreciated of all men, and teachers were not prepared to sell it for a diploma of which they knew nothing.

THE Lord Advocate, in opening a new primary department in connection with Stirling High School, said that the popularly founded scheme of education had been led by the school boards of Scotland in two directions. In the first place, they had educated the mass of the people to take pride in knowing the details of school administration, and they had quickened the interest in educational progress. In the second place, they, together with the Department, had brought up the schools to a pitch of excellence to which the general public did not give sufficient heed. The Education Act, taken in conjunction with the Children's Act, might be said to denote the high-water mark in the treatment of children by the State, and he said so knowing well the position of affairs all over the Continent and in America. They were fortunate in Scotland in having no religious question to complicate and obscure the educational situation. South of the Tweed, the schools were made the battle-ground of sects, and the very inwards of education seemed to be rent asunder by the ecclesiastical bigots.

THE Council of the Educational Institute of Scotland, after full consideration of the changes in the curriculum for students in training proposed by the various provincial committees, unanimously adopted the following resolutions: (i) That the option to attend a university be given to all qualified students on entering upon training; (ii) that the normal course for such students be *three* years; (iii) that students should be permitted to attend two university classes during each session; (iv) that students failing to do satisfactory work in any year be "sent down" from the university and confined to purely professional studies; (v) that students willing to undergo a three months' course of intensive practice in teaching at the close of the third session be allowed to take three university classes in their third year and be freed of their professional studies throughout the session.

THE question of the nature, and, indeed, of the existence, of the university preliminary examination is at present receiving much consideration in educational circles. Two schools of opinion are gradually disclosing themselves in regard to it. One section would abolish the examination altogether, and make the leaving certificate of the secondary school the sole passport into the university. The other, while willing to recognise the clauses of the leaving certificate, would retain the preliminary examination in order to keep the university portals open for students who have not had the advantages of a full secondary-school course, but who through private study, or in other ways, have qualified themselves to profit by a university course. The latter policy is in accord with past traditions. Further, the Scottish universities receive students from all parts of the world, and for this class also, as well as for private-school pupils, some form of preliminary examination should be retained.

IRISH.

THE Intermediate Education Board has advertised for six permanent inspectors. The salaries of two of these will be £700, rising by annual increments of £20 to £800; two others will receive £500 a year, rising by annual increments of £20 to £700; and the other two £350, rising in the same way to £700. In addition, there will be travelling expenses and pensions. These inspectors will be subordinate to the Assistant Commissioners, but, like them, will be practically Civil servants. Their duties are advertised—naturally in somewhat vague terms—to be (*a*) to inspect intermediate schools in such matters as the Board directs and to report thereon; (*b*) to assist in the preparation and revision of the programme of examinations and of the examination papers; (*c*) to visit examination halls during examinations; (*d*) if necessary, to assist in other duties of the Assistant Commissioners; (*e*) to report upon and advise in all matters referred to them by the Board; and (*f*) to perform such other duties as may from time to time be prescribed by the Board.

THIS advertisement gives rise to important queries. Why are the inspectors to be paid different salaries? Are some of them to be subordinate to the others, and are they not to have equal authority? Can six men in any way adequately perform the duties of inspecting 300 schools every year? It has been suggested that the small number arises from the false position taken up by the Board as to the source of their remuneration. Mr. Birrell was asked in the House of Commons where the money was coming from, and whether he would give an assurance that the payment of inspectors would not involve a diminution of the school grant. The answer was that no portion of the Board's income was specially allocated to school grants. But it is not proposed to lessen the amount spent on other objects, and therefore the sum will *de facto* be deducted from the amount available for schools, as has been the case during the past few years whenever the Board's income has shown a decrease. The Board believes this grant is too large, but is not prepared to diminish it sufficiently to appoint an adequate number of inspectors. The Board is entirely wrong in this supposition, as we hope the inspectors will point out to it in exactly the same way as has been done by Messrs. Dale and Stephens in their report. But the Board has never grasped this side of the question, nor had the courage to ask the Government to increase the grant or to pay for inspection from a special fund, as is done in England and Scotland, and in Ireland too under the Board of Technical Instruction.

IN connection with the school grant, it is interesting to observe that once more the scale of payment is lowered. For the year 1907–8 it is as follows: for a pass in the preparatory grade, £3 2*s*. 4*d*.; in the junior grade, £6 4*s*. 8*d*.; in the middle grade, £9 7*s*.; in the senior grade, £14 0*s*. 6*d*.; for a pass with honours in the junior grade, £9 7*s*.; in the middle grade, £14 0*s*. 6*d*.; in the senior grade, £21 0*s*. 9*d*. Some of these figures seem high, but it must be remembered that they are paid on the result of an examination in which nearly half the candidates fail, while a large proportion of pupils in school eligible by age is for various reasons not entered at all.

THE Intermediate Board has issued the time-table of its examinations to be held this year. The arrangement is similar to last year. The examinations begin on June 15th and end on June 26th.

THE Department of Agriculture and Technical Instruction issued at the end of 1908 a number of important and interesting circulars concerning various branches of its work. (1) It issues regulations concerning conduct of local examinations to be held by it for Ireland on behalf of the English Board of Education in subjects of science and art, together with a time-table of these examinations to take place in May and June. (2) The programme of the Irish Training School of Domestic Economy has been completely revised. The instruction in the school will be divided into two main branches: (*a*) a course of household management, and (*b*) a course of training for teachers of domestic economy. The course will be strictly practical. (3) The Department is prepared to hold examinations in connection

with the award this year of scholarships to be granted under schemes of technical instruction in operation in counties and urban districts in Ireland. The examinations will be conducted free of charge to the local committees, and will take place in June for (*a*) scholarships tenable at day secondary schools, (*b*) scholarships tenable at trades preparatory schools, and (*c*) scholarships tenable at residential schools of domestic economy. (4) The Department issues revised regulations of the courses which it has arranged with the Commissioners of National Education for providing means for the training of National school teachers in elementary experimental science as part of local schemes of technical instruction. The principal change consists in the extension of the course by the addition of a third-year course in rural economy. (5) A similar arrangement has been entered into with the Commissioners of National Education for the training of National school teachers to give instruction in domestic economy. This course will be one of three years. Particulars of all these proposals can be obtained from the Department.

In the organisation of the new universities the most interesting event has been the election by the Senate of Archbishop Walsh as Chancellor of the National University. The fight about compulsory Irish still rages, its partisans being anxious to force the hands of the new authorities. The chambers of commerce, on the other hand, are anxious that chairs of commerce should be founded in the new colleges.

WELSH.

A representative conference, called on the initiative of the Pontypool Urban District Council, has sent the following resolution to the Monmouthshire County Authority: "That, having regard to the shortage of pupil-teachers in the Eastern Valleys district and the percentage of failures in past examinations, this conference strongly urges upon the County Education Committee the pressing necessity of establishing a well-equipped and efficient centre for training candidates for positions as pupil-teachers; also a higher elementary school, free to children who have passed the fifth standard." Now Wales possesses ninety-five county secondary schools, and if the action of the Pontypool conference is going to be imitated, it will be a demand for the elementary-school teachers to be kept severed from the secondary schools yet more. One of the speakers at the conference said, "The existing secondary schools are suited to scholars intended for a university career." The Pontypool conference, therefore, is a protest against elementary-school teachers receiving their earlier education in either a secondary school or in a university college. Yet, no doubt, the same people would tell us how Wales leads the world in education!

At the Ebbw Vale County School there are 70 boys and 133 girls. The headmaster recently reported that of this number 27 are in receipt of scholarships awarded out of the school funds; 15 boys receive scholarships from the Ebbw Vale Company, 20 have scholarships from the Ebbw Vale Education Committee, 18 receive scholarships from the County Council (probationerships). Two are bursars, and receive a maintenance fee of £10 in addition to free tuition and books. Twenty are pupil-teachers, 2 are supplementary teachers, and 25 are in receipt of bursaries varying in amount from what is sufficient to cover the cost of books only to what is sufficient to cover the cost of books, train fares, and tuition fees. This makes 62 pupils in the school with education totally free, 42 who pay for books only, and 35 whose education is partly or completely provided for by bursaries. Further, the headmaster states that the cost of education in the school amounts to £10 per pupil, so that the governors had to provide this year, roughly, £2,000, whilst the parents paid about £200 in tuition fees. In this secondary school, therefore, we may take it that education is nine-tenths free.

One other point is worth mentioning in connection with the report on Ebbw Vale School. There are sixteen old students of the school now in the University of Wales, nine at Aberystwyth and seven at Cardiff. With the exception of three, all these entered the University with scholarships or exhibitions varying in value from £50 to £10. The college fee for degree courses is £10. But it must be remembered that there is a liberal provision of open entrance scholarships in the Welsh university colleges, so that if Ebbw Vale County School is typical of other Welsh schools, the provision of education in the secondary schools and colleges of Wales is well on the way to becoming free to pupils of any ability.

Mrs. Lloyd George has visited Cardiff to distribute the prizes at two of the elementary schools in that city. It must have been a big task, for it is reported that at one of the schools there were 636 prizes for regular attendance and good conduct. Mrs. Lloyd George stated that there are more than 200,000 children being taught Welsh in the elementary schools of Wales at the present time. Principal Bebb, of Lampeter, in speaking at the prize distribution at Tregaron, offered a prize to the best of the pupils of the school for Welsh, and added that he hoped they would not imagine that he wished to exaggerate the importance of Welsh. Still, in a district like Tregaron, in Cardiganshire, he thought Welsh ought to be encouraged, and that those who spoke it should know it scientifically.

The Welsh National Library has obtained a temporary home in the old Assembly Rooms in Aberystwyth. The Welsh collection of the University College of Wales, Aberystwyth, is to be handed over immediately. This collection reaches about 12,000 volumes. The librarian states that the charter allows considerable latitude with regard to the circulation, at any rate of duplicates, for educational and research purposes, but naturally it is very doubtful if, in any circumstances, extremely rare books will be allowed to go out of the National Library. Still, by circulating duplicates or triplicates, it may be practicable "to take the benefits of the National Library into the remotest hamlet in the Principality."

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Students' Life and Work in the University of Cambridge. By Karl Breul. 54 pp. (Bowes and Bowes.) 1s. net.—These lectures were delivered by Dr. Breul in connexion with the last University Extension Summer Meeting at Cambridge, and they admirably serve the purpose of giving an outline of the activities of Cambridge students. Foreigners in particular will derive much valuable information from these lectures. A good bibliography is appended.

French Pronunciation made Easy. By M. H. Hébert. 48 pp. (Marlborough.) 1s.—We notice that this booklet is in its fourth edition, and it may therefore be well to warn readers that the promise of the preface ("Assuming

that the student of this book has a fairly pure English pronunciation to begin with, if he practise the rules exactly as given, he cannot fail to acquire a good pronunciation") is a very sanguine anticipation, not likely to be fulfilled. We do not believe that the pronunciation of French can be acquired by means of any book without the help of a living teacher; and this book, in particular, contains much that is of doubtful value. Thus it is said that *a* in English *pale*, to be correctly pronounced, must not be diphthongised; that the short *a* of *chapeau* is the same sound as *a* in English *mat*; that *um* final is pronounced as *um* in *umbrella*; that French *ei* is a diphthong; that *gn* sounds like *ng-y*; and *bagne* is just like *bang*, &c. The mode of transcription (*enorgueillir* is represented as "ah-nohr-gher-yeer") is distressing.

La Fontaine, Choix de Fables, avec Commentaire par H. Taine. Edited by H. B. Dawes. 134 pp. (Blackie.) 1s. 6d.—This is a capital little edition. Mr. Dawes has arranged seventy-eight of the fables under appropriate headings (Le Roi, La Cour, La Noblesse, &c.), and has skilfully added extracts from Taine's admirable "La Fontaine et ses Fables." He has also given ten pages of notes, in which difficulties in the text are well explained in French. The type is excellent, and altogether we have nothing but praise for this little book.

Th. Gautier, España and Émaux et Camées. Edited by C. E. Delbos. xxxii+107 pp. (Clarendon Press.) 2s. net.—In an interesting introduction Mr. Delbos fixes the position of Gautier in the literary history of his country and gives some account of his works. In the notes he carefully explains all allusions. The book is a welcome addition to the excellent Oxford Higher French Series, ably edited by M. Léon Delbos.

A New Pocket French Dictionary. Abridged from the larger dictionary by de V. Payen-Payne. 219+220 pp. (Cassell.) Cloth, 1s. 6d. net; leather, 2s. 6d. net.—Cassell's larger dictionary is well known and deservedly popular, and the pocket edition will probably command a good sale also. We can well believe Mr. Payen-Payne that the work of abridging was difficult, and we congratulate him on successfully bringing to an end his laborious task. Our only regret is that the publishers still adhere to an antiquated and unsatisfactory method of indicating the pronunciation.

Classics.

The Year's Work in Classical Studies, 1908. Edited for the Council of the Classical Association by W. H. D. Rouse. 176 pp. (Murray.) 2s. 6d. net.—This is the third issue of this valuable year-book, and amply justifies the work of the Classical Association. It deserves to be in the hands of every classical student, both as a book of reference and as a means of keeping *au courant* with the progress of classical knowledge. There never was a time when the study of Greek and Latin, in a broad sense, was so vigorous and virile and so little pedantic, and this book should prove it to the most hardened sceptic. The sections written by separate scholars, who are recognised authorities, follow the same lines as in previous years, covering excavations, archæology, sculpture, numismatics, religion, mythology, inscriptions, history, grammar, textual criticism, papyri, literature, Hellenistic and New Testament Greek. There is an interesting section by the editor on classical studies—the time-table, method, examinations, and final aims of classical study. The discussion does not pretend to be exhaustive, but gives references to the chief articles bearing on the subject written during the year; and this is the method of the whole volume and its chief merit. A student without this volume must miss, as most of us did in the past, a great deal of interesting and important work that was going on all round us. The past year has not been productive of any startling discoveries, but there have been some illuminating publications. We take two examples of the very many works referred to. Dr. Rice Holmes's "Ancient Britain and the Invasions of Julius Caesar," a companion book to his "Caesar and Gaul," is "a positive encyclopædia for all that concerns Britain from Neolithic times to 43 A.D." Prof. Traube's posthumous work, "Nomina Sacra," makes a new epoch in the study of Latin textual criticism and palæography. He has discovered the explanation of the difference of certain methods of "contraction" and "suspension," which gives an entirely new aspect to the early history of abbreviations, and forms a new and valuable test for the age of MSS.

Herodoti Historiae. Two vols. I.–IV., V.–IX. Edited by Carl Hude. No paging. (Clarendon Press.) Paper, 4s.; cloth, 4s. 6d.—This edition is one of the most welcome books possible. A critical text of Herodotus has long been needed, and the Oxford Bibliotheca not only gives a critical text, but gives a text so printed and arranged that it is useful to the widest possible circle of readers. For schools especially we most heartily recommend this edition. Mr. Hude, the editor, has collated a large number of the MSS. himself, and has added something to our knowledge of the text. He has not tried to reconstruct an Ionic dialect such as might have been spoken, but since he regards the historian's dialect as more or less a convention, he has tried to reproduce the archetype manuscript. From the school point of view this matters less than that his text is reasonable, readable, and handy.

Elementary Latin. By F. J. Terry. 220 pp., interleaved. (Methuen.) 2s.—We welcome this book as another sign that teachers are not content with the dry bones of the valley of death. The substance of it is a story of an English boy's life and surroundings in his home in Surrey. The learner begins with complete sentences and logical sense. The text stands alone on its page (labelled B, we do not know why), and a white sheet opposite; next come two pages of vocabulary; next sentences for exercise, English and Latin. Thus the reading and exercises are out of sight of the vocabulary: a good thing. Later, there is some English history in Latin and Julius Caesar. There are also specimens of question and answer. But the book needs improvement in points of scholarship. Thus *femina* is not a wife (p. 7); and the author does not understand the relation of order to emphasis. The answers on pp. 5, 11, and generally are quite wrong. *E.g.*, the answer to *spectasne* is *specto* (Mr. Terry makes it *anguillam*), the answer to *quid* is *rosam* (not *femina*), the answer to *estne* is *non est* (not *ianua*). A glaring example of this is the sentence 2 on p. 61. The whole book ought to be revised from this point of view. All vowels naturally long should be marked (only a few are marked), and we think such names as *Swegn* (p. 105) and *Senlac* (p. 127) should be latinised, at least the former.

Caesar's Commentaries on the Gallic War, translated into English. By T. Rice Holmes. (Macmillan.) 4s. 6d. net.—Dr. Rice Holmes's "Caesar" is now a classic amongst commentaries: prefixed to which was an excellent paraphrase of the "Gallic War." Here we have a translation, with a very brief sketch of Latin history prefixed, the summary of the first chapter of the "Caesar." The style is clear, if a little more verbose than the original:

but who could really put Caesar into English now Dryden is dead? References and criticisms are added at the foot of the page. Would it ever be possible that such a book as this could be set for the Sandhurst examination? Even a county councillor might be led to see that it could be useful.

Basis Latina. By E. V. Arnold, assisted by W. Rippmann. Part I. Introduction—Syllabus—Grammar Notes—Vocabulary—Index. viii+136 pp. (Dent.) 1*s.* 6*d.*—"'Basis Latina' is intended as a companion book, taking the place of a grammar, for the second, third, and fourth years of the school Latin course. It is also intended to define a proper standard of knowledge as a basis for examinations in Latin accidence, syntax, and unprepared translation." The book does not contain a tabulated accidence, which is supposed to have been learnt in the first year; it contains classified lists of forms, with syntax compressed into short typical sentences, and it has clear logical arrangement. The short paragraphs of the text are explained in notes. Finally, there is a vocabulary of some 2,000 words, which contains about 1,500 of those given as commonest in Lodge's "Vocabulary": the other 500 are different, because Lodge compiled his vocabulary with a view to a few selected books, and in "Basis" more attention is given to those words that are used in common life. This is a most scholarly book, and, unpretentious as it seems to be, it may mark an epoch in the organisation of Latin teaching.

English.

Self-Help Exercises in English. 96 pp. (Pitman.) 1*s.* net.—The author's aim has been to apply one of the principles of the modern language "reformers" to the study of English; he has composed a book of selections for treatment on the intensive system, and we may say at once that the experiment has roused our keenest interest. We are sure that the author is well aware that many English teachers already partially adopt this method in their reading, but we do not remember to have seen before a compilation of unconnected extracts treated in this way. The exercises have been carefully prepared, and should prove an excellent model for those teachers who prefer—with good reason, we think—a course of literature definitely chosen in accordance with some unifying principle. The author in a short preface points out the features of the thirty-two exercises contained in the book; they include (*a*) the use of books of reference, especially dictionaries; (*b*) the derivations, music, and fitness of words; (*c*) paraphrasing; (*d*) varied grammatical exercises; (*e*) composition—*e.g.*, the function of the paragraph and imaginative themes based on the passage; and (*f*) the elements of prosody. We wish the venture all success.

The Teaching of Reading in Training Colleges. By Henry Cecil Wyld. xiii+114 pp. (Murray.) 2*s.*—Prof. Wyld's book will be read, we hope, by many secondary-school teachers as well as by training-college tutors, if only because, in the future, all primary-school teachers will have received their earlier education in the secondary schools. How much longer will Prof. Wyld and his friends have to reiterate the simple truth that phonetic training must form the basis of all attempts to teach reading? At any rate, this book should clench the argument, for it tackles the problem in the clearest and soundest way possible. We content ourselves by emphasising the systematic treatment of the subject here adopted; first of all the whole question of pronunciation is considered, then typical provincialisms are contrasted with standard pronunciation, the distribution of sounds in standard English is commented upon, and finally there are two excellent chapters on voice management and expression in reading and reciting. The last fifty pages of the book are taken up with phonetic texts of passages chosen for their literary interest and their special suitability for reading aloud. We have noticed only two slips. The symbols for *th* are omitted from both tables (pp. xiii and 76), and rïdiŋ is printed instead of rïtiŋ on p. 67. Two golden sentences may be quoted from the preface: "In conclusion, I should like to add that, from long experience of the primary teacher, I feel that the mother tongue should be the chief subject of his training. Not the niceties of English grammar and analysis, nor the more specialised refinements of English philology, but a broad and humane study of English as a means of expression."

Principles and Method in the Study of English Literature. By William MacPherson. viii+92 pp. (Cambridge University Press.) 2*s.* net.—Mr. MacPherson deserves the best thanks of all teachers of English literature, for he has written a book which shows conclusively that well-defined method, founded upon an equally well-defined psychological basis, furnishes an effective means for raising the study of English literature in schools into as excellent an instrument of intellectual and æsthetic training as the curriculum can offer. He has restated in a plain and acceptable form the principle of those who hold that the value of school teaching in this subject lies in the fact that it is chiefly by English literature that we must give our pupils ideas, style, and imagination. His chief task has been to consider the details by which this is best done. His method, worked out under many interesting forms, is—as any scientific method must be—largely comparative. The book teems with practical suggestions, and all we can do is to refer especially—if only from personal gratitude—to the treatment of novel-reading in class, or rather out of class; to the chapter on the essay, so important, as the author points out, from its immediate relation to the pupil's own creative efforts; and to the plea for comparative treatment in the drama by making use of translations of the Greek tragedians.

Readings in English Literature. Junior, Intermediate, and Senior Courses. Vol. iii., 1780–1880. By E. W. Edmunds and F. Spooner. (Murray.) 2*s.* 6*d.*, 2*s.* 6*d.*, and 3*s.* 6*d.* respectively.—This venture is an adaptation to the teaching of literature of what teachers of history have long known as the concentric system. The ground covered in all three courses is chronologically the same, and, indeed, the extracts are taken from the same authors; the difference lies in the difficulty of the thought and the suitability of the content for varying ages of readers. The editors have done their work admirably; the passages have been selected with real discernment of what appeals and what should appeal to the taste of junior, intermediate, and senior pupils. The series undoubtedly helps to make possible the intelligent teaching of the history of English literature.

The Story of English Literature. Vol. iii., 1780–1880. By E. W. Edmunds and F. Spooner. 372 pp. (Murray.) 3*s.* 6*d.*—"This book is what its title describes it to be—the *story* of English literature; that is to say, its aim is chiefly expository, and not critical." We are glad that the authors have taken so sensible a view of their scope, and we recommend their treatment thoroughly. This third volume is, of course, intended primarily as a companion to the three courses reviewed above, and we know

of no saner method of awakening literary appreciation than to provide copious illustrations of particular authors at the same time as a general view of those authors' relationship to the literary development of their times. It is perhaps no drawback to this series that it will only yield its best results to very intelligent and sympathetic teaching.

Dictation from the Best Authors. By Frances W. Harrison. Preface by Sara A. Burstall. x+85 pp. (Longmans.) 1s.—An interesting attempt, by a teacher of long and successful experience, to teach spelling to children between the ages of nine and thirteen. The method may be termed that of "prepared dictation."

History.

Stories from the History of Berkshire. By E. A. G. Lamborn. 96 pp. (Clarendon Press.) 1s.—Last August we reviewed Mr. Lamborn's "History of Berkshire," and therefore need do no more than say that this is a smaller and simpler book by the same delightful author, printed clearly and with good pictures.

Merrie England. By G. Greenwood. xv+211 pp. (Ginn.) 1s. 6d. net.—Miss Greenwood came from America more than fifty years ago on a visit to England, and was charmed with the country and what she read into it. The result was this little book, now reprinted, which contains stories, some historical, some legendary, connected with various places, such as Sherwood Forest, York Minster, the Tower of London, Westminster Abbey, &c. These stories make pleasant reading, and are illustrated with one or two pictures to each.

English Life Three Hundred Years Ago. Edited by J. Turral. 116 pp. (Methuen.) 1s.—Mr. Turral has here reprinted the first two chapters of G. M. Trevelyan's "England under the Stuarts," and has added notes, a short vocabulary, a list of subjects for essays, and a bibliography, thus making them into a school text-book. Mr. Trevelyan's work challenges comparison with the introductory chapters of Macaulay's history, and gains by the comparison. We know more of social England now than when Macaulay wrote. The notes are good; but Mr. Turral should not write "Jean Calvin" (p. 106), and the Star Chamber was not "founded by Henry VII." (p. 102).

The Renaissance and the Reformation. By E. M. Tanner. xii+307 pp. (Clarendon Press.) 3s. 6d.—A well-written text-book of European history, 1494–1610, telling the stories of the various countries of Europe at that period. The arrangement of the chapters is not always ideal, and leads sometimes to the necessity of referring backwards and forwards; but the problem is a difficult one, and a chronological survey at the end of the book corrects some of the deficiencies arising thence. There are also genealogical tables, eight maps, and an index. In the maps of Europe, the inclusion of parts of Italy in "the Empire" is apt to be misleading. Dr. Bryce differentiates between "the Empire" and "territories depending on it," and we think Miss Tanner should have followed his lead.

The Galleon of Torbay. By E. E. Speight. x+400 pp. (Chatto and Windus.) 6s.—Mr. Speight has been reading Hakluyt, and the old chronicler has inspired him to write a "romance telling," to quote the title-page, "how some western men and women, Virginia bound, were lost for three hundred years; how a Devon boy (the other day, as it were, for Marconi telegraphs come into the story) found their old city beyond the lagoons and led the folk from havoc; how a brown maiden fell in love with him in the heart of danger and followed him through the unknown mountains, and how a Yorkshire cricketer harboured them in Mexico; with many another adventure, into which is woven a span of the wild girlhood of the Moon-wind." We have read the romance with pleasure, and can recommend it to our boys and girls. For ourselves, the chief interest is the way in which an English ship was preserved as a sacred relic, and how Hakluyt's voyages were coupled in the minds of the people of whom the book tells with the Bible and other books as a sacred literature.

Mathematics.

A Course of Pure Mathematics. By G. H. Hardy. xvi+428 pp. (Cambridge University Press.) 12s. net.—The general aim of this work, in so far as that aim can be described in a few words, may be said to be that of introducing an able student who already commands a good knowledge of elementary or "school" mathematics to the study of higher pure mathematics on lines that are consistent with modern conceptions of mathematical rigour. It is essentially a book for a mathematician or for one whose interest in mathematics lies, not in the applications, but in the philosophy of the subject. Estimated from this point of view, the book is excellent; it shows evidence on nearly every page, not merely of a thorough knowledge of the "arithmetical" treatment of mathematics, but of experience of the special difficulties even of able students. There is not a chapter in which the treatment can be said to be commonplace, but, for various reasons, chapter iv., on limits of functions of a positive integral variable, and chapter viii., on the convergence of infinite series and infinite integrals, appear to us to be particularly valuable. To some the wealth of detail in the fourth chapter may seem to be excessive, but our own experience is in absolute agreement with that of the author in regard to the necessity for this method of treatment of the notions there discussed. It may be found difficult to use this *Course* as a text-book, but even where it cannot be so used it should certainly be constantly referred to; in other words, various portions of it should be mastered by the student, and other parts referred to as occasion arises—and occasions will often arise, whatever other text-books may be in use. The examples are very rich and instructive, and form quite a feature of the work. Besides university students, there is another class of students to whom we would strongly recommend this course, namely, the teachers of mathematics. Not that they could use the book with their pupils, but that they would learn something of the spirit of modern pure mathematics and would better appreciate the difference between "intuitional" and "arithmetical" mathematics.

(1) *Elementary Algebra.* By P. Ross. xii+484+(Answers) 64 pp. 4s. 6d. (2) *Elementary Algebra.* Part II. By P. Ross. viii+273–484+(Answers) 45–64 pp. 2s. 6d. (Longmans.)—Part I. of this text-book was noticed in THE SCHOOL WORLD, vol. viii., p. 477; Part II. completes the work, and the two parts together form the volume numbered (1) above. The second part treats of the more advanced portions of a course of elementary algebra, and includes a discussion of limits and infinite series with applications to the binomial, exponential, and logarithmic series. The book contains much good matter, but there is perhaps too much compressed into the space to make the reading as simple as it might be; thus the section on

imaginary numbers (pp. 321–2) is too brief. The compression is felt still more in the discussion of limits and infinite series; these important matters require a fair amount of space and great precision of language, and we do not think that these requirements are adequately met. Perhaps the best chapters are those on indices, equations, and the graphs of rational functions. Though the exposition of Part II. does not seem to us to reach the level of Part I., yet the book as a whole is likely to take a place among the popular text-books.

Intermediate Geometry. Experimental, Theoretical, and Practical. By Alex. Leighton. viii+219 pp. (Blackie.) 1*s.* 6*d.*—A very sensible introduction to the study of geometry; there is no doubt at all in our mind that the average boy would find real interest in the course here developed, and that by the time he had completed the course he would have acquired a good knowledge of the geometrical properties of figures and a fair amount of skill in recognising and reasoning about these properties. The course covers the ground prescribed by various examining bodies for elementary work in geometry (Oxford and Cambridge Junior Locals, Intermediate Certificate of the Scotch Education Department, &c.).

Miscellaneous.

Highways and Byways in Surrey. By Eric Parker. With illustrations by Hugh Thomson. xix+452 pp. (Macmillan.) 6*s.*—Surrey is the home of the southern people, and the story of its establishment by the East Saxons has many points of interest to the historian. The fine scarp of the Hog's Back, stretching from Farnham to Guildford, is to geologists a chalk ridge, but to the student of history it is part of the highway along which worshippers travelled to Stonehenge, the track of Phœnician traders, Roman legions and Norman invaders, and the Pilgrims' Way. Mr. Parker takes us along this great southern highway from west to east, and from various points on it explores the country on either side. The picturesque and human aspects of the county appeal to him particularly, the result being that his pages are filled with incidents and people of interest to all whose minds respond to the influence of the spirit of the past. Like other volumes in the series, this one is instinct with life. Not a mile of the journey is traversed without a narrative which carries the mind back to some historical person or occurrence associated with the spot. For the research which he must have exercised and the pleasant style in which he presents his results Mr. Parker is to be heartily congratulated; and the sketches by Mr. Hugh Thomson represent the high-water mark of artistic expression. We cannot suggest that the book is adapted for general use in a class-room, but we do say that it claims a place upon the shelves of every school library in the beautiful inland county with which it deals.

The Oxford Hymn Book. xiv+922 pp. (Clarendon Press.) 3*s.* 6*d.* net.—To lovers of poetry and music many of the hymns and tunes found in hymn-books in common use are distressful compositions. Cheap sentiment and mad symbolism masquerade in phrases of mangled English, and sing-song ditties reminiscent of the music-hall are used in whole or in part to appeal to the emotions, even though the spirit of reverence is sacrificed. An attempt to provide a hymn-book which, without being pedantic, satisfies high ideals of poetry and religion should, therefore, meet with an encouraging reception. The present work may claim to be of this character. It may be described as an expanded edition of the book used in the Oxford University Church, with the addition of tunes to the words. Dr. Strong, Dr. Sanday, Miss M. Church, and the Rev. J. M. Thompson are responsible for the preparation of the hymn-book, and the skilled advice of Dr. B. Harwood has been taken in the selection of the music. There are 350 hymns in the book arranged for times and seasons, Saints' days, sacraments, special occasions, and general purposes; and in addition several beautiful Latin hymns are included. The whole is indexed according to first lines, metre, names, composers, authors, and original first lines of translated hymns. We have nothing but praise for the collection; but it may be doubted whether the quaint fount of music-type will meet with ready appreciation. The fount is clear enough, but being unfamiliar it is a little difficult to follow, and its advantages over the usual setting are not obvious at first sight. This departure from common forms of type is, however, of no depreciative consequence, and we welcome the hymn-book—both verse and tunes—as a production of the broad, dignified, and elevating character worthy of our times.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in The School World *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The Correlation of the Teaching of Mathematics and Science.

In the belief that it may interest those who have read with appreciation Prof. Perry's paper on "The Correlation of the Teaching of Mathematics and Science" (vol. x., p. 459), and the subsequent letter by "Ex-Preparatory-school Master" (The School World for January), with its suggestions for a much needed reform in the teaching of mathematics, I venture to send a slight sketch of the methods actually in use in the Greenock High School for Girls.

As suggested in the above-mentioned letter, the first and greatest difficulty which confronts the teacher of mathematics is that of "language." Finding no text-book in which this difficulty has been removed, we have practically dispensed with all text-books in the lower forms. The younger children use Blackwood's "Arithmetical Examples" for the mechanical work, which we distinguish from true arithmetic by calling it "mental gymnastics," which have to be done in order to make the brain strong and able for "arithmetic," but which is no object in itself. The children, as a rule, make up their own problems in the form of short stories, and the mistress inserts the numbers and new steps as required.

In the third form, where the average age is ten, the arithmetic lesson is devoted more exclusively to problems, new methods being taught, only when found necessary, to meet some new difficulty which has arisen. In this form the problems are dictated—first of all without actual numbers, if they happen to be large—and the pupils are able—even the "duffers"—to form a mental picture of the question and to put it down in writing under the headings "given" and "required." They then proceed to do the arithmetic, *i.e.*, the thinking, and to write down full explanations of each step. When this has been corrected the numbers are supplied, and the answer found as rapidly as possible. One lesson a week is devoted to "gymnastics" or quick work. Three-fourths of the marks for any question are always allotted to the arithmetic, and one-fourth only to the actual calculation.

Should any words occur in a question which are not quite understood, a dictionary is produced and the exact meaning determined. This teaches the child that, however difficult a question may appear, she can always find out the meaning for herself without appealing to the teacher for help. Technical terms are treated like foreign words, and are carefully learnt *after* the pupil has become familiar with the object or idea, the new word being gradually substituted for the old, familiar one. This method is at first used chiefly in the geometry class, and later in the algebra class.

Geometry is begun as a study of the size and shape of the objects in the class-room. The pupils learn to measure accurately lines and angles. One day they are given paper and asked to draw a certain object. This, being solid, is found to be too difficult *at present*, and so it is decided to study plane geometry in the meantime. Kindergarten gifts are now used, being of a convenient size for drawing, and the pupils thus become familiar with many geometrical figures and their properties. An instance may be cited here of how the pupils of this form discovered the principle of drawing to scale for themselves. When asked to draw a picture of a certain object it was found that one line was too long for the paper. This was recognised as a difficulty, but not as an insurmountable one. Very soon one child, a naturally "good" pupil, suggested that the line should be made 12 cm. instead of 12 in. long. This done, the picture was found to be out of proportion, and to rectify this another child suggested that the other lines should be made shorter also. They were then given a much smaller piece of paper, and told to draw the same picture, still *accurately*. Millimetres were found to be necessary. When left to work entirely alone a few pupils used two different units in the same drawing; but this was found to give an inaccurate picture, and so they discovered that only one unit can be used at a time. This discovery of theirs struck me as being unusually quick for beginners of that age, and shows clearly, I think, that they regard geometry from a practical point of view. They show also some aptitude for deductive reasoning, for they were able to explain *why* they might expect the angles below the base of an isosceles triangle to be equal when they had discovered by measurement that the angles at the base were equal.

In the fourth form, where the average age is twelve, the study of algebra is begun. It is, however, at first called arithmetic, the first term being spent in learning how to express known operations by means of signs and symbols and in learning to "translate" problems into "algebraic language." In all questions, where possible, they learn to verify their results by substituting known symbols (figures) for the unknown quantities. In the second term, having *all*—even the "duffers"—intelligently mastered the rules of expression and of simplification, a problem is—as it were, accidentally—given to which a numerical answer is required. Equations are thus introduced, in which, by legitimate mechanical devices, a simple equation of the form $x=a$ is obtained, which is found to be the required solution.

In the geometry class the pupils of this form are taught to write out fully or to say fully all their propositions, deductive proofs being given where they have been able to discover them, and practical proofs, or proofs by mensuration, where the former has not been possible. They are thus taught the necessity for an accurate proof of some sort.

In some ways, then, I think we have been practising successfully, as I have no doubt have many others, some of the reforms which were suggested by "Ex-Preparatory-school Master" for text-books for beginners. Text-books carrying out those reforms would indeed be acceptable to many teachers of mathematics.

HELEN R. REID.

Greenock High School for Girls.

The Use of the Slide Rule.

AT the recent North of England Conference the audience seemed too astonished at Mr. Garstang's paper to consider fully the paper by Mr. Brotherton on the use of the slide rule. Its use in a physical laboratory cannot be overestimated, and I find boys of fourteen or fifteen years of age experience no difficulty with a slide rule after one or two attempts. I adopt it as a means to an end, and do not bother about its principle—that comes under the work of the teacher of mathematics. My plan on introducing it is to find the product of simple numbers. The boys know that $2\times2=4$, $2\times3=6$, $4\times5=20$, $8\times6=48$, $11\times12=132$. The slide rule is arranged under instruction to give the first or second product, and the boys perceive at once how to get the answers in the other cases. Products such as 368×456 then become simple matters of manipulation and practice. As good slide rules are expensive, I have adopted the following means for providing each boy with a slide rule. A strip of semi-logarithmic paper one inch wide is damped and then pasted on to a strip of millboard. When this is quite dry the scale is cut into two similar strips by means of a sharp knife and steel ruler. The boys are delighted to take these home and to give themselves plenty of practice in multiplication and division by pitting themselves against members of their family who use the ordinary arithmetical methods.

The slide in the commercial rule is generally very stiff in working until it has been much used. This is overcome to some extent by dusting it with a little French chalk. Once the method of use has been learnt it is a simple step to show how the upper scale gives the square of the lower scale, and to show the use of the marks for 3·14 and 0·7854 so necessary in the solution of circle measurements.

When boys can use a slide rule much of their laboratory time is saved. The boy no longer spends half his magnetism lesson in solving the product $d^3 \tan\alpha$ or his heat lesson in finding the various values for pv. His energies are devoted to the principles of the experiment. To the teacher it is even more valuable, for he is able to check the experimental data during the course of an experiment, and so correct any errors which would not have been found out until much useful time had been lost.

E. L. COTTON.

Central Secondary School, Sheffield.

Quantitative Chemical Experiment.

CAN any reader of THE SCHOOL WORLD tell me the name of a substance that when heated in a crucible over an ordinary Bunsen burner will, without the adoption of any precautions, undergo a quantitative change? Potassium chlorate, unless heated carefully at first, bubbles over; and sodium carbonate crystals behaved in the same way. Copper sulphate decomposes if heated too strongly, and a high enough temperature cannot be obtained to decompose chalk. Silver carbonate is decomposed quantitatively by heat, and no precautions need be observed, but the substance is too expensive for ordinary class use. In those cases where the cost does not matter, the action of heat on silver carbonate forms a most useful qualitative exercise.

J. HART-SMITH.

Battersea Polytechnic Day Schools.

Maxims on Education.

I spent every day of the last week in October in the Franco-British Exhibition, and devoted my time mainly to science, education, and the fine arts. As a retired schoolmaster, I was greatly interested in the Education Hall, and glad to find that it had received so much space in such a prominent position and that the public took such a great interest in it. A novel feature that greatly added to that interest was the fine frieze illustrating many phases of educational work. It is a pity that this may ultimately be destroyed—if that fate has not already overtaken it—instead of being distributed among the schools of London.

Under these pictures were a series of the most appropriate maxims, proverbs, and quotations relating to education that I believe I have ever seen. Not finding any record of them in the official guide to the department, I inquired at the office and learned that no such record had been printed! That was not one of the least of the blunders connected with the great show. The official guide would have been worth preserving on that account alone had it contained a list of them. I carefully copied them in my note-book for my own benefit, but it has occurred to me that probably other teachers would like to see them in a permanent form. I therefore venture to ask the editors of The School World to try to find space in their valuable pages to rescue from oblivion this admirable collection of "tabloids" of wisdom. James C. Christie.

Cathcart, Glasgow, December 18th, 1908.

Learning makes a man a fit companion for himself.

Three things always are to be formed in the pupil—mind, hand, and tongue.—*Comenius.*

Just education forms the man.—*Gay.*

The secret of education lies in respecting the pupil.—*Emerson.*

Better unborn than untaught.—*Haywood.*

'Tis education forms the common mind,
Just as the twig is bent, the tree's inclined.—*Pope.*

Train up a child in the way he should go, and when he is old, he will not depart from it.—*Proverbs.*

All wish to know, but few the price will pay.—*Juvenal.*

Noble art is nothing less than the expression of a great soul.—*Ruskin.*

Learn and live; live and learn.

Learning by study must be won,
'Twas never entailed from father to son.—*Gay.*

Few people know how much they must know, in order to know how little they know.

Knowledge is proud that he has learnt so much;
Wisdom is humble that he knows no more.—*Cowper.*

The mind's the standard of the man.—*Watts.*

The cultured mind, the skilful hand,
Contending for the world's command.

When pupils love the master, they will soon love the teaching.—*Sacchini.*

Studies serve for delight, for ornament, and for ability.—*Bacon.*

We may claim for schools of industrial science and the fine arts that they associate the mind of the young with the order, law, precision, power, and beauty of Nature's operations.—*Sir Wm. Mather.*

What the mind is intent upon, that it remembers best.

It is better to form than to reform.—*Locke.*

Go speed the stars of thought on to their shining goals.—*Emerson.*

Knowledge comes by eyes always open and working hands, and there is no knowledge that is not power.

Take fast hold of instruction; let her not go; keep her, for she is thy life.—*Proverbs.*

Knowledge is power, education is life.

There is no lie in Nature; no discords in the revelations of Science, in the laws of the Universe.—*Kingsley.*

Whoso loveth instruction loveth knowledge.—*Proverbs.*

To prepare for complete living is the function which education has to discharge.—*Herbert Spencer.*

The patient investigation and accurate methods required to obtain desired results in the school of experimental and technical science cannot fail to impress, refine, and ennoble the character of those who work in this direction.—*Sir Wm. Mather.*

In becoming enlightened the world rises to unity.—*Kant.*

It is the essence of good teaching that it shall involve fresh thinking.—*Magnus.*

There is no darkness but ignorance.—*Shakespeare.*

God has placed no limits to the exercise of the intellect He has given us on this side of the grave.—*Bacon.*

A wise man will hear and will increase learning.—*Proverbs.*

No good work is ever lost.—*Max Müller.*

Whatsoever thy hand findeth to do, do it with all thy might.—*Ecclesiastes.*

Wisdom has been created before all things.

The boy's the father of the man.

Knowledge advances by steps and not by leaps.

A man is but what he knoweth.—*Bacon.*

Tongues in trees, books in the running brooks, sermons in stones, and good in everything.—*Shakespeare.*

Education is the apprenticeship of life.

Defer not till to-morrow to be wise.—*Congreve.*

The education of youth is the greatest and most glorious work of a lawgiver.—*Lycurgus.*

Learning is better worth than house or lands.—*Crabbe.*

They must upward still and onward who would keep abreast of truth.—*Lowell.*

Work is a blessing to the soul and character of the man who works.—*Kingsley.*

Learning without thought is labour lost.

Oh for the coming of that glorious time when, prizing knowledge as her noblest wealth and best protection, this imperial realm, while she exacts allegiance, shall admit an obligation on her part to teach them who are born to serve her and obey!—*Wordsworth.*

[Since Mr. Christie's letter enclosing the mottoes given above was received, a "Report of the British Education Section of the Franco-British Exhibition, 1908," by Mr. Arthur G. Symonds, has been issued, and we are glad to find that it includes a list of the mottoes.—Editors.]

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The School World

A Monthly Magazine of Educational Work and Progress.

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EXPERIMENTAL PSYCHOLOGY AND EDUCATION.

By J. A. GREEN, M.A.
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I.

THE services of the psychologist to education have been frequently questioned. Amongst psychologists themselves there are opposing views. Prof. Münsterberg refuses to admit that a knowledge of analytic psychology can be of the smallest service to the teacher, whether the analysis be reached by way of experiment, or be founded upon brain anatomy, or even when it is the result of painstaking and intelligent observation of children. "I do not see how anyone can hope that the teacher will profit for his teaching methods from these three fields the moment they are correctly defined and are not mixed in the usual *mélange* with other things." At bottom, however, it is all a question of definition, for Prof. Münsterberg does not mean that interest in the mental life of children is out of place in the teacher, but that his interest is to be a "sound and natural one." Such an interest is, however, anti-psychological in its attitude, because it means that the teacher must regard men and children as "indissoluble unities, as centres of free will the functions of which are not causally but teleologically connected by interests and ideals, not by psychophysical laws." It is in history and literature, in ethics and philosophy, in poetry and religion, that the teacher may wander at his ease and "learn to understand man, while psychology only teaches him how to decompose man." If we are to exclude the study of interests and ideals, the connective tissues, as it were, of adult mental life, from our definition of psychology, if there are no laws of mind that are not psycho-physical laws, the position laid down by Prof. Münsterberg is apparently unassailable.

Yet a scarcely less distinguished psychologist, in the person of Prof. Meumann, whilst careful to emphasise the difference in the point of view of psychology and education, is equally emphatic in his belief in the ability of the psychologist to render service to the teacher. In his view the analytical work of the psychological laboratory may help educational research by suggesting methods of attack in special problems. It may even help the practical teacher, with whom it will always remain to settle the problems of the class-room, provided that his practice takes into account the results of scientific inquiry. It may, of course, be objected that the workings of mind are not capable of being reduced to law. If free will means anarchy in the sphere of mind, psychology and education are both equally absurd. The processes may be of baffling intricacy, but not more so than nervous process, and we have yet to wait for the physiologist who shall tell us that nervous action is not capable of being reduced to a system of uniformities—that it is too varied and complex to allow any idea of the kind to be entertained.

Thanks very largely to Prof. Meumann's initiative, a movement towards educational research, of which we in this country should take cognisance, has already made marked progress. It has its journal and at least two considerable text-books. As its inspiration comes very largely from one who won his laurels primarily in the field of experimental psychology, it may be well to put on record some of the services which the methods of exact experiment have already rendered to the new branch of study. Meumann's lectures are themselves a mine of information, though almost every month brings fresh work into the field.

At this point it may be well to insist on the fact that educational research involves analytic as well as synthetic inquiry. The difference between typical schools of research seems to lie in the extent to which they demand preliminary analysis. Under the pressure of practical necessity, we have hitherto not unnaturally centred our interest in the curriculum of the school, its systematic organisation as covering a number of years and as embracing various branches of knowledge. Behind all this work there lies our general idea of what education should aim at, and possibly in addition we have been guided by more or less uncertain generalisations concerning the nature of mind and its development. We may in this way have been led into ingenious schemes of correlation and concentration, and we may have been induced to ignore the educational values of the actual environment in an endeavour to adapt our courses to "culture epochs," as the recapitulation theorists have it. Whatever principles we may have adopted, it is clear that there is endless

room for experiment in putting them into practice, and work of the kind is of the greatest possible value, if only on account of the enthusiasm it commonly engenders, both in teacher and in taught. But enthusiasms are not scientific, and they sometimes lead to error. Still more commonly, their success is followed by spiritless imitation. Both Pestalozzi and Fröbel found this out to their sorrow. "The letter killeth, the spirit giveth life." There can be no finality in teaching practice.

The new school is imbued with the spirit of the exact sciences, and on the basis of ascertained fact, it aims at establishing principles of practice. Exactly as the science of agriculture aims at elevating the rule-of-thumb methods of the old-fashioned farmer to a level at which method will mean the intelligent application of scientific knowledge, so it is hoped to improve teaching practice by rigorous examination of its presuppositions and by steadiiy increasing our knowledge of the "material" on which the teacher is working. A science of education can only be built up in this way. The unity of the facts entitling it to be called a science will come from the point of view which determines their inclusion, and the methods of the science will be partly borrowed from other sciences and partly determined by the peculiar problems to be solved. The "child-under-tuition" will be the central point of investigation, and his responses to the stimuli furnished by the school in its social organisation and in its class-room lessons and exercises will be of especial importance. These are the facts to be explained, and their explanation involves analysis and experiment.

A present controversy illustrates very well the difference between an ascertained fact and a strong suspicion or an *a priori* assumption as a basis of school practice. The Herbartians pour scorn upon what is called the "dogma of formal training." It is urged that a sound mathematical training will not make men exact in their dealings with others, nor will neat handwriting be accompanied by neatness in dress. Specific mental training is not generalised. Thus practice in mathematical analysis will, it is said, give no mental quality that will show itself in unravelling a tangle of fact and fiction such as is daily presented in the law courts. In fact, all the old notions of the training values of subjects, or of particular exercises, have gone with the old faculty psychology. On the other hand, not a few experimental psychologists have noticed that their subjects make extraordinary progress in the particular capacity under observation at the time. Every music teacher knows that formal training brings greater elasticity of voice and greater sensitiveness to tone and pitch. The same type of improvement is admitted to take place whichever of the senses is put through a systematic course of exercises. May not formal training similarly be fruitful of results, if it is applied to mental functioning that is not immediately sensory? The whole question is one for systematic inquiry, and when we find Van Biervliet urging the importance of formal memory training, Meumann demonstrating the increasing accuracy of observation when systematically exercised, it should at least give pause to those of us who deride the "dogma of formal training," though we may continue to believe that it is often misunderstood and even foolishly applied.

The new school of educational research demands that nothing shall be taken for granted, that educational principles shall be expressions of ascertained fact, and that, whilst the analytical methods of laboratory work are an essential preliminary, the final test of the truth of our generalisations must be made in the schoolroom under "field" conditions.

It is proposed in these articles to give an account of the methods which have been pursued in some of these preliminary inquiries, and of the results that have been obtained. In this regard, however, it should be said that relatively little is, so far, to be expected. The words of Binet, in the final chapter in his book, "L'Étude expérimentale de l'Intelligence," should not be forgotten in any judgment that is passed. "The best lesson to be drawn from this book, which has cost me three years of study, is that of patience." Possibly nothing of final value has yet been demonstrated. In any case, it is the spirit that underlies the work that is more important than its actual achievements at the moment.

It has been already said that the child is the centre of interest in these inquiries, and in particular the school child. Until recently writers on child psychology have stopped short at the three-year-old or thereabouts. The researches of Preyer, Perez, Baldwin, and Miss Shinn have been concerned with infancy, and the teacher's problems have been only indirectly touched upon. A step forward has been made, and genetic psychology in the service of education is following, with all the exactitude of objective methods, the mental development of the child at school. The fundamental principle of early education is that of "teaching through the senses." *Nihil est in intellectu quod nisi fuerit in sensu.* For that reason it will be interesting to see what research has to tell us about the much-discussed subject of

Observation.

The inspiration to inquiry on this subject came from sources entirely unconnected with education. Binet's dissatisfaction with the procedure of the cross-examining barrister (*juge d'instruction*) in the French law courts led him to undertake his famous inquiry into individual suggestibility, and especially into that of school children. In order not to frighten anybody with words, he conducted his experiments without even telling the schoolmaster what it was he was after. "I showed the children a sheet of cardboard on which I had stuck various objects—a stamp, a ticket, a button, a portrait, a drawing, &c. I said to them before allowing them to see it, 'Look at it carefully, as I shall only allow it to be in front of you for ten seconds, and when

it has been taken away, you will write in detail all that you have seen, and I shall put a number of questions to you.'" In this way he thought he might put the children in a position not unlike that of one standing as a witness to events which he was not able to describe minutely, because he had not set himself to notice them carefully when they were taking place. Under the influence of his questions, fifteen children out of twenty-four gave a wrong colour to the stamp, four children said the stamp had been used, although it was new, twenty-one described wrongly the way in which the button was fastened on the card. Out of forty answers given by each child, eleven were wrong on the average, though, of course, the number of wrong answers varied largely with the type of question. "Was the stamp blue or yellow?" produced more inaccurate answers than "What colour was the stamp?" for the simple reason that the stamp happened to be red. Binet then took three children together and questioned them. He showed how sensitive they were to suggestion, not only from himself, but from one another.

Space forbids our going further into the details of Binet's work. He demonstrated once for all the absolute untrustworthiness of evidence based upon certain types of cross-examination, and he wrote a note to the effect that a new science was necessary—the science of evidence. This was in 1900. Five years later he expressed his regret that other work had kept him from pursuing the subject, and his still greater disappointment that this note of his had found no echo in his own country. Nevertheless he had been the prophet to Germany, where Dr. Stern, of Breslau, had in the meantime taken up the subject, and interested not only psychologists but also judges, professors of law, criminal psychologists, and teachers. Interests so powerful made the foundation of a journal a possibility, and Barth, of Leipzig, publishes the *Beiträge zur Psychologie der Aussage*, which Binet tells us "excite at once admiration and sadness" in him. "It was in France that we should have done these things. The idea came from France: why have we not developed it?"

This is interesting personal history, but we must leave it to follow the development of the inquiry so far as it concerns the teacher. Following Binet's procedure, Stern asked a number of children of various ages to look at a picture for ten seconds. The children were taken individually, and after looking at the picture each child was asked to write down all he could remember of it. Then followed a number of questions about the picture, amongst which were some that suggested answers that did not correspond to facts—inquiries about objects that were not present, &c. Stern's results confirmed those of Binet. The independent statements contained a smaller proportion of mistakes than the answers to questions: 6 per cent. in the former, 20–30 per cent. in the latter, without counting the suggestive questions. Stern also noted that the persons in the picture were more noticed than the objects, and their activities were perceived with greater accuracy than the colour and number of isolated things. The results, as a whole, suggested four types of observer, which proved roughly to correspond with age. Children under eight rarely recorded anything but isolated objects—a man, a chair, a table, &c. Thereafter came a period in which the happenings in the picture made the chief appeal. Children of nine or ten began to observe space and time relations and the causal connections between things. "In the middle of the room there was a table at which a man and his son were sitting—the man on a chair and the son on a form. The mother is putting a jug on the table; on the left there is a cradle in which a child is lying," &c. This was the work of a backward boy of fourteen. It is typical of the ten-year-old stage. Finally came a type in which the qualities of individual objects were noted and recorded. Further, the influence of the suggestive question was steadily less as the children advanced in age.

It was left to Prof. Meumann to apply the research to education, and under his inspiration Fräulein Borst pursued an investigation on lines designed to avoid some of the errors underlying Stern's method. At least three, and probably four, independent psychical factors enter into the ordinary giving of evidence. In the first place, there is the degree to which the objects spoken of have been clearly apprehended; then there is the question of memory—its tenacity and general trustworthiness; thirdly comes the difficulty of turning what has been observed and remembered into language equivalents; and lastly, the influence of imagination upon the evidence. There arises the question how far these various factors are fixed in character, and how far they are capable of being trained. It came out in the course of the investigation that the fundamental psychical characteristics of the different individuals greatly affected the accuracy of their results; *e.g.*, the ideational and attention types [1] to which the person belonged. General intellectual capacity also showed itself. The abler the child the fewer his mistakes, though this was clearest in the extreme cases. Measured, however, by the subjective certainty of the various witnesses, the research showed that the feebler children were always more positive than their abler friends, and of course their mistakes were numerous in proportion to their inner satisfaction.

Still more interesting were the results of the inquiry into those factors which were assumed to be variable and possibly educable. In the first place, they tried the effect of training to observe the objects in a picture in a definite order. The results were taken before any practice was given, then followed systematic practice, and finally a test. To everybody's astonishment the practice had brought no improvement. Inaccuracies were more numerous than ever. This was accounted for by supposing that the children had given too much attention to the method itself; it had become a burden instead of a help. They changed

[1] See later articles.

their mode of operation, and the children were taught to look for one class of object or one quality at a time in the pictures shown to them—persons, clothing, colour, form, position. Result, very marked improvement; but could they not do better still if they were put through exercises in the use of the general notions themselves before they attempted to apply them to pictures? Colour was first attacked. By means of the usual lustreless paper, the children were taught to name and match colours, then to choose particular colours from a colour complex, to locate them precisely, and so on. After a period of instruction of this kind in the various categories mentioned above, the picture experiment was made again. As a result, every child showed greatly increased accuracy in his observations, though in a small number of cases this was at the cost of diminished range.

As a last effort to effect improvement, they tried to enlist in a special degree spirited conscientious effort amongst the children. The spirit of competition was gently called into play, and under this stimulus the best work of all was done. Many papers contained as much as 30 per cent. fewer mistakes, though not infrequently again at the cost of a smaller number of observations. The children were less positive of their own accuracy, though throughout these experiments the greatest self-assurance was found among the younger and the less intelligent children.

Perhaps the most striking point about the inquiry is the support it gives to formal training as an introduction to complex practical exercises, and hardly less important is the light which the work throws on the old idea that the development of the child proceeds from the percept to the concept (*von der Auschauung zum Begriff*), an idea which, to say the least, expresses a very one-sided view of the matter. It goes in a far higher degree, says Dr. Meumann, from the general to the individual notion, because, in the case of vision, for example, it is the former that settles what is to be looked at!

THE TEACHING OF THE ENGLISH TEXT-BOOK.

By J. H. Fowler, M.A.
Clifton College.

Speaking at the City of London School recently, Mr. Asquith paid a fine tribute to his old headmaster, Dr. Abbott, "one of the first headmasters to show how Shakespeare might be illuminated by the application of the same scientific methods which had long been applied to the classics of Greece and Rome." In the present state of scholastic opinion on the teaching of English literature, this tribute and the cheers of the Prime Minister's audience, many of whom could confirm from their memory the justice of his verdict, convey to us a useful reminder that the "intensive" method of teaching, which treats great writing, whether it be in Greek, Latin, or English, as worthy of slow, patient, concentrated study, is not necessarily dull and futile and barren of delight. Meanwhile, some evidence seems already to have come in—as, for example, in that admirable report of the Scottish Education Board summarised in The School World for November, 1908—that the "extensive" method which has in so many schools been substituted is not an unqualified success. A class may skim the surface of many "texts" without once dipping into the joys of literature, and as for the essays which they write when an examiner tries to find out what they have learnt—well, the best description of them is the negative one contained in the late W. T. Arnold's rebuke to a younger journalist. "I'm afraid it is rather pig-wash," admitted the novice ruefully, when Arnold criticised his attempt at a leading article. "My dear fellow, it is nothing half so definite," was the immediate and incisive reply.

I hold no brief for the "intensive" method, which, in hands less skilful—or from lips less "golden"—than Dr. Abbott's, is said to have inspired in many a lifelong distaste for Shakespeare. More than any method is the personality of the teacher, his own love for his subject, and his power of making his enthusiasm manifest to his pupils. But at least two things need to be said for the "intensive" method. First, in the hands of a real master of literature it had a special kind of effectiveness that no other method can claim, affording an example of true scientific study, an object lesson in the careful handling of such problems as every serious investigation into any subject involves. Secondly, in the hands of any competent teacher—of any teacher, that is, who aimed at something better than drilling his class in a parrot-like repetition of notes—it provided, at all events, definite and real intellectual discipline.

So convinced am I of the importance of this intellectual discipline if literature is to have any great educational value, that I should strongly advocate the retention of the intensive method of teaching in a certain proportion of the English hours in all schools that rely altogether or mainly on English for a training in literature. In schools where Latin and Greek are studied intensively, or where foreign classics are taught as literature and not merely linguistically, the problem is different. There, I take it, the main object of the lesson in English literature is to implant or foster the love of that literature, to make the pupil aware of the treasures it contains, and to guide his or her taste in the right direction. In all schools this object will be of prime importance. In schools that are giving intellectual discipline in other ways, we may acknowledge the importance of inspiring the love of literature to be so supreme that we might be content to leave out of sight the question of intellectual discipline altogether, were it not for one consideration that will appear later.

Now for the purpose of inspiring the love of literature in a reasonable proportion of boys and girls some form of the extensive method seems essential. We do not learn to read with enjoyment until we learn to read at a pace quick enough

to admit of our seeing as a whole the plot of a story or play or epic, the argument of an essay, the march of a history. Furthermore, the school life of the average pupil is short, and the range of literature is wide. Among our grown-up friends who have a real love for some one part of literature, what a variety of likings we find—and what a variety of antipathies! If we take our authors at school so slowly that the pupil who leaves school at sixteen or seventeen has done nothing more than read two or three plays of Shakespeare and be introduced to two or three works by other writers, we have obviously not the same chances of striking upon something that will appeal to his fancy as we have when we cast our nets more widely; while the chance of lighting upon something that is antipathetic to this or that pupil is proportionately more serious when we dwell upon each book for a longer time.

Hence the demand that we should widen the range of English reading in schools seems legitimate and reasonable, even convincing. All the more important is it to ask—Does the extensive method necessarily mean, as inspectors appear to be finding in some cases, cursory and superficial reading of books half-understood, with an absence of any permanent result, and an absence of any training in the mental concentration required for the comprehension of anything in literature that is at all subtle or profound? Even if the aim of the English lesson is to be mainly the exciting of interest, do not let us forget that it is only the strenuous lesson, as a rule, that keeps up its interest for any length of time. Just as the normal form really prefers a teacher who enforces good discipline to a teacher who fails to do this, so it prefers a lesson that requires work to a lesson that does not. The lesson in English literature, then, must not be a lecture or a reading by which the master seeks to titillate the ears of his class. It may be this, with good effect, for an occasional hour, or for a small portion of the regular hour. But in the main we shall make this lesson one into which the class are to put all the brain-power they possess, with an occasional opportunity—in answer to some question involving the exercise of taste and judgment—of discovering in themselves, and using with conscious pride and delight, a higher quality of brain than either we or they themselves have had reason to suppose that they were endowed with.

At this point we may conveniently consider the scheme for the historical treatment of English literature in schools pressed upon us by some authorities. "Literature is dull to the average child," they say, "because he is taken through literary specimens at school much as he might be taken through a geological or botanical museum by an unintelligent cicerone. He sees rows of specimens in cases, but they have no meaning to him. Just as a geologist or botanist could soon awaken a child's interest by bringing the specimens into order and relation with each other, so the good teacher of literature can arouse interest by setting specimens in relation to their age and each other, and connecting the growth of literature with the growth of a nation." That a teacher of genius can make this plan, or any plan, successful, need not be denied; but one may well doubt whether there is any sovereign virtue in the plan itself. The analogy followed is more specious than real. The most vital things in literature are the things that do not depend for their interest on our knowledge of their authorship or even of the age that produced them. The appeal of the story of Joseph, or the story of Odysseus, or of the "Pilgrim's Progress," is universal and unconditioned. As we grow in knowledge we gain new points of view from which to regard these stories, new lights upon their meaning, but the supreme value of them lies in the fact that they can produce their most profound impression on the immature and uninstructed mind. By all means let us use biography and history and our grown-up knowledge of literary evolution to illuminate the authors we teach in school. By all means let us awaken the historic sense by the reading of parallel or contrasted passages from authors of other countries or ages. But do not let us feed our pupils on specimens chosen to illustrate the "development of style" or "the course of literature." To make that our chief aim is, as Mr. J. C. Smith has wittily said in the admirable preface to his admirable "Book of Verse for Boys and Girls," "literally preposterous." For "it means that the purpose of poetry is to illustrate its own history," whereas "unless poetry has some value of its own, its history can have none." Literary history belongs, in the main, to a later stage, when our reading both of history and of literature has broadened and deepened. The label "mediæval" or "eighteenth century" attached to a poem neither is nor perhaps can be significant of much to a child, though to a well-educated boy or girl of eighteen it should convey a clear meaning.

There would be more to be said in favour of historical courses of literature if early writers were always or generally simpler and easier to understand than later writers. As a matter of fact, though for ballad-poetry and for some stories in prose we go to old writers, or to translations and adaptations of old writers, in many cases that which is nearer to our own time is easier of comprehension than that which is more remote. The better plan, then, I take it, is to choose our authors for school-reading, not primarily by their age, but by their comparative difficulty and the suitability of their subject-matter to the intellectual needs and attainments of the class. So many lists have lately been drawn up on this plan that there is no need to add to them here. I will only say that there is still perhaps a tendency to take certain standard books—*e.g.*, Bacon's Essays—too early in the school course. I doubt whether Bacon can be read with profit below a sixth form. On the other hand, even in the lowest forms there is no reason for declining upon anything that is not first-rate

literature. The choice is abundant if we take trouble with our selection.

With a scheme of reading on the extensive method duly mapped out, can we lay down any principles by which a teacher may ensure some fruit of his pains? I think so, though nothing will secure him against the examiner (he is alleged to exist, and traditional forms of question certainly bear a charmed life) who expects of the class that has read "extensively" a knowledge of minutiæ such as can only be got by "intensive" reading.

(1) Put the question to yourself with each new book, "How can I make this book a living thing to the class? What can I say that will awaken their interest at starting, and set them in the right attitude of mind towards it?" In that spirit give your introduction. A very brief one will often suffice. Take care above all things not to make the class weary of the book before they have begun it.

(2) Map out your time carefully beforehand. A play of Shakespeare may be taken profitably in four lessons or in forty: but if you are to take it in four you must know precisely what you are to aim at: and the shorter course, if it is to be a real success, probably requires more skill and more study, in proportion, on the teacher's part than the longer.

(3) In your own preparation mark carefully the great scenes, the great passages, the great lines to which you will desire to direct special attention.

(4) Even in the most cursory reading take pains to fix these special passages on the memory of the class—by intensive study of the form, practice in reproduction, and the learning by heart of noble passages in prose as well as in poetry.

(5) In the case of a prose author ask frequently for a written summary of the argument of the pages read: let the class furnish this sometimes from memory, sometimes with the help of the book: the two exercises are different, and both are valuable.

(6) Ask for the meaning of difficult passages that are essential to the argument: be content, as a rule, to pass lightly over obscurities that do not affect the general sense.

(7) When time is allowed for preparation out of school, test the reading by a few questions to be answered on paper at the beginning of the lesson; *e.g.*, "What epithets are applied to the following substantives?" "To what substantives are these epithets applied?" "By whom and to whom were the following lines spoken?" "Mention any metaphors and similes that occur in these pages." "Give the meaning of the following sentences in your own words." Test-questions of this kind will ensure that the preparation is a reality, and can be disposed of in ten minutes.

(8) Let some part of almost every lesson be given up to reading aloud, with due insistence on *intelligent* reading.

(9) Let the English reading be used as material —and occasionally as a model—for the weekly or fortnightly theme.

(10) Whenever it is possible correlate the English literature with the English history that is being read.

I fear—let me rather say, I hope—that these principles will seem truisms. However that may be, I feel sure that it is on careful attention to these and the like commonplace details that success in teaching largely depends.

HOME READING AND THE CONTINUATION OF SCHOOL STUDIES.

By Norman L. Frazer, M.A.

More than three years ago[1] an article appeared in The School World on the work of the National Home-Reading Union. The special object of that article was to interest secondary-school teachers in the work of the Union, and to show how its aims and methods might be utilised in secondary schools. The numerous inquiries that ensued from different parts of the country led the writer to infer that the work of the Union was largely unknown to his fellow-teachers, and that some such co-operation as the Union offered would be warmly welcomed by them. The object of the present article is to consider how far the Union possesses the necessary machinery for taking part in what becomes daily a national question of more and more importance—the continued education of the children who leave the elementary schools; it is hoped, too, to differentiate the aim and the methods of the Union from those of other agencies concerned with the same problem.

It is fortunately a fact that the most varied agencies are at work—approaching the difficulty from differing points of view and concerned with different aspects of the case. Education is many-sided, and in this field at any rate there is room for many kinds of ideals and for many practical expedients. The child leaving the elementary school has arrived at that period of life and social status when his needs must be considered from physical, economic, and humanistic points of view. In a country where hitherto the State has come usually late in the day to sanction and co-ordinate voluntary effort, voluntary associations bear the brunt of initiative, and by the nature of the case usually grapple with a well-defined section of the wider difficulty. In this article, therefore, it is unnecessary to refer at length either to the agitation for a State system of compulsory continuation schools or to those voluntary associations which are principally concerned with physical and more narrowly economic interests. We take it that the National Home-Reading Union has staked out its claim in the humanistic field, and that the measure of its success is to be gauged by the fruit of its endeavours to secure for the child as he leaves the elementary school such a normal

[1] Cf. The School World, November, 1905.

development of ideas and culture as will fit him for intelligent citizenship in a democratic community. Those, therefore, who desire to consider the ethics and practicability of the wider question may be referred to the recent Moral Instruction and Church Congresses, and, above all, to Prof. Sadler's "Continuation Schools in England and Elsewhere." For my part, while I subscribe unhesitatingly to Mr. Mansbridge's dictum (p. 385 of the book just mentioned) that "working lads must be educated as whole boys, not merely as sections," I wish here to emphasise the special function of the National Home-Reading Union in this education.

That function, briefly expressed, is to "direct the fateful gift of reading." I shall here assume that the reader is familiar with the ordinary methods of the Union—reading-lists, magazines, reading circles, tutorial help, and the rest—and confine my view to the use of these methods for the particular object of continuing and developing the literary education of ex-elementary scholars.

Whatever may have been, or may be, the ignorance of secondary-school teachers with regard to the work of the Union, no such ignorance exists among their elementary-school colleagues. The Board of Education has spared no pains to bring about the most cordial co-operation between the Union and the schools; the Code itself recognises and enforces the good that this union of forces may effect; education authorities have followed the lead of the Board, and in an ever-increasing number of schools the programme of the Union is triumphantly installed; finally, but by no means least significantly, the public libraries have entered this triple *entente*. But all these splendid endeavours must forgo much of their fruition if the next step is not taken—to keep up the work begun when the scholar is removed from the guidance and restraint of school life. And here emphatically it is the next step that counts.

First of all, then, how does the Union itself regard its position, on what methods does it rely, and with what omens of success? The answer to these questions is given in an open letter addressed to chairmen of education committees and to directors of education by Dr. Paton. In it he quotes from the Board of Education's "Suggestions for the Consideration of Teachers, 1905," the following passage: "In this connection the help of the National Home-Reading Union will be found a fruitful means of continuing the work commenced in school . . . (in some cases) the younger teachers may well serve as leaders and establish circles in the school buildings in the evening, with the consent of the local education authority or the managers." He then proceeds to refer to the active assistance of the public libraries, and to point out that the public librarian is now informed of the existence of every circle that is formed in any school, and—

> will at once inform the circle of the books in the library which may be helpful to the teacher. . . . It is thus earnestly hoped, especially for circles formed of those who have left school, that the librarians may procure books that will be useful for those reading circles which, as the Board of Education has desired, should be formed in connection with every school of the country, and of which the readers might be the younger teachers or some of the managers of the school. In this way the good work begun in school would be continued into the after years of life.

From another publication of the Union—"Suggestions for the Conduct of N.H.R.U. Reading Circles in Evening Schools," we select two other practical suggestions:

> In the case of ex-scholars the local managers might become, or find, leaders, and thus influence the scholars after they leave school. Pupils who have left school should still be allowed, for one year at least, all privileges—*e.g.*, use of library books, &c.—enjoyed by scholars in connection with the reading circles of the school; and they should be earnestly pressed to continue to avail themselves of these privileges, special circles being formed for them if necessary.

Such are the lines on which, up to the present, the Union has moved; but when all is said and done, it recognises that all the work in evening schools and elsewhere is comparatively small when account is taken of the huge majority who never reach there. It is this huge majority that must be won for the Union's influence.

Without entering in any great detail into the difficulties that are to be encountered, one or two factors in the question may be given; some of them have already been mentioned in the publications from which I have quoted. The requisite organisation will have in the first place to adapt itself to the different conditions of urban and rural scholars; it will have to face the obvious and matter-of-fact obstacles of time and place; it will have to secure, at any rate in many cases, the sympathy of employers; it will require the cordial support of the parents; and it will have to enlist the help of innumerable voluntary helpers, busily engaged in other interests. But all these difficulties may be surmounted, and yet without the enthusiasm and the organising aid of the teachers in the schools, very little will be effected.

For our purpose the chief differences in the assets of town and country lie in the presence in the former and the absence in the latter of the free public libraries and the polytechnics; but possibly the establishment of village halls may do something—however little—to equalise opportunity. In any case it is to these agencies and to the schools themselves that we must look as the headquarters of the Union's efforts. In many cases, no doubt it would be a simple matter for the local authority to sanction the use of the schools—with the trifling attendant expense—for the holding of reading circles; in others, the public libraries could arrange for the use of the children's hall—where it exists—at specified times. When we have followed the American example of having special children's librarians in the public libraries, we shall also have provided an official machinery for directing children's further studies. When we shall have placed the public libraries them-

selves in the hands of the local education authorities, and thus emphasised the essential correlationship of schools and libraries in a scheme of national education, we shall have taken a long stride in efficient organisation. But these things are not yet, and meanwhile we must make the most of the means we have. When the matter of place has been settled—and about that at least there need be little difficulty—the question of time is to be considered. Obvious reasons make against a late hour of the evening—the physical weariness of the pupils, the convenience of the leaders, the leisure of caretakers, are but a few of them. Is it not possible here for the education authority or managers to appeal to parents and employers? In the past there has been far too little association of this kind. In small towns and villages especially it would be an easy matter, and merely entail the exercise of a little tact and common sense to make arrangements suitable to all parties; but it requires a little initiative and a little organisation, and these must come from the school authorities. One or two experiments in this direction would be most helpful. It is on the managers, too, that we must rely for the necessary recruiting of voluntary helpers.

There is in every community at the present time a number of people with the necessary culture and the necessary leisure, and it only requires a little encouragement to bring them into this sphere of social usefulness. By getting into touch with such bodies as the local branches of the English, Historical, Geographical, and kindred associations, local education authorities would reap and confer a benefit; they would gain the assistance of many individuals keenly interested in special educational subjects, and they would give an opportunity to these associations to extend their influence among widely diffused masses of their fellow-countrymen. We can even imagine without difficulty local branches of such associations co-operating with the N.H.R.U. in their corporate capacities, and developing thereby the civic side of their usefulness. The prescribing of essays and the awarding of prizes are not matters of high and immediate import, but if by such means a feeling of help and comradeship is engendered, it is probable that a real justification will have been found for many societies whose members are now wistfully wondering what form their future development should take.

But as was hinted before, the crux of the whole matter lies in the attitude of the teachers. Let us be frank. The duties of an elementary-school teacher are exacting; to have imposed as of right or even of expectation the burden of this new work would be intolerable. Already much time and enthusiasm are given to the recreative education of the pupils entirely apart from the school routine. "Old scholars'" associations flourish only in proportion to the zeal of the teacher. Here, if anywhere under present conditions, the new work, if it means *extra* work, must be absolutely voluntary. But in all interests there must be some limit to this voluntary service. It is to be feared that already the work in the evening schools is far less effective than it might be, owing to the fact that most of the teachers engaged have already done a hard day's work. If this work that the Union has undertaken is worth doing at all—and the Board of Education and local authorities are unanimous in saying that it is the crying need of the time—some way must be found for doing it well. Is it beyond the resources of a local authority so to arrange the work of the teachers in its employ that those especially fitted to undertake this bridging of school and workaday life should have such relief from other duties that they can give all their energies to this new and promising undertaking? The spectre of rates will frighten many—but there are some enlightened communities, especially in the north, in which earnest citizens and sound public opinion will think the experiment worth making. Of the sympathy of the teachers with the Union there is no question; Mr. Yoxall, on behalf of the N.U.T., and Dr. Macnamara have made that perfectly plain. We wonder whether the N.H.R.U. ever asked the N.U.T. to draw up, from the teachers' point of view, the best methods for this continuation work of the Union. We could well believe that, if the N.U.T. gave its great experience of educational organisation and knowledge of educational needs to that problem, a practical solution would speedily be found.

Those who desire further information about the Union should write to its secretary, Miss A. M. Read, 12, York Buildings, Adelphi, London, W.C.

THE TEACHING OF ALGEBRA.

By P. B. Ballard, M.A.

I.—Its Connection with Arithmetic.

ALGEBRA may be taught without a text-book; but, as a matter of fact, it never is. The exigencies of school life demand that each pupil be provided with at least a supply of suitable exercises. The teacher thus finds himself in his treatment of the subject largely dependent on the text-books available. He may, and often does, hold views with regard to the pedagogical development of the subject at variance with those of the writers of the books in question; and if he follows the text-book it is merely as a reluctant concession to expediency. Up to quite recently, in fact, the opinion and practice of the best teachers have been far ahead of the text-books. But during the past year there have been placed upon the market about half a dozen algebras which go far to remedy this discrepancy. They are largely the outcome of that growing discontent with the older methods which finds expression in the recent recommendations of the Mathematical Association. The cardinal weakness of the older text-books lies in the almost entire dissociation of the subject from arithmetic; for in this dissociation is to be found the secret of the difficulties the subject presents to

young pupils. How serious those difficulties are the reader can realise readily for himself by recalling the time when he first entered upon the study of algebra.

I have no reason to suppose that his experience differed materially from mine. The teachers adopted none of those devices so cheerfully urged by recent writers on the subject. There was no subtle alluring across the border-line that seemed to separate arithmetic from algebra, so that the unwary pupil might not know that he had entered new territory; no preparatory equipment for travelling in this new country; no hint that the inhabitants thereof would be found to be familiar friends in an unfamiliar garb. It was a stepping forth into the darkness.

We returned from our holidays one morning, and found that we had to start the study of algebra. Boldly we took the plunge, and found ourselves floundering in a sea of unintelligible symbols. Of teaching there was little or no pretence. Each had a text-book—Todhunter's "Algebra for Beginners"—and that must suffice. We attacked the exercises with the usual zeal of novices, contenting ourselves in the main with getting the answers correct; but not entirely silencing the persistent demand of the young mind for some sort of rational explanation. What was the meaning of it all? Had it any practical utility? What was its bearing upon everyday life? It had evidently something to do with arithmetic; but what was the nature of the connection? The result of a sum in arithmetic was an intelligible answer to an intelligible question—a question we ourselves might not inconceivably ask. But in algebra even the question was unintelligible. We could not conceive ourselves as likely to be so circumstanced as to be really concerned about knowing the G.C.M. of $x^3-3a^2x-2a^3$ and $x^3-ax^2-4a^3$.

Apart from the purposelessness of the problems there were other points of obscurity. The symbols themselves had no more significance than the big A, little a, and bouncing B of our infant days. In the "simple rules," which we worked mechanically, there were evident bonds of connection with the corresponding rules in arithmetic; but, at the same time, there were perplexing points of difference. The absence of carrying, the presence of negative quantities, and the order of attack were constant elements of confusion. At last many of us, I fear, gave up the struggle towards lucidity, and came to regard algebra as a kind of complicated game (not of the most amusing sort), to be played according to certain rules set forth in the text-book, or supplied by the teacher. *E.g.*, "Like signs multiplied together give plus, unlike give minus," was one of the rules. "When you multiply the same letters add the indices" was another. They did not seem to differ essentially from the rules of whist or chess.

In my own case, light began to break in when we arrived at chapter xxi., "Problems leading to Simple Equations." Here at last did I discover that there was some practical value in the symbolism of algebra. Here there appeared some purpose in carrying out operations with quantities which were as yet undiscovered. Nor am I alone in this experience. Others whom I have consulted acknowledge a similar illumination at the same stage. For twenty solid chapters, however, we had been working almost entirely in the dark, and the light to which I have referred did little to illumine the path we had already trod.

Is not this a fairly faithful account of the early stages in the mental history of the young beginner in algebra of thirty years ago? And is the teaching of algebra much better nowadays than it was then? It is still treated in many cases as an entirely new subject. The algebra lesson is quite distinct from the arithmetic lesson. In some schools, indeed, the course in arithmetic is quite completed before the algebra is begun.

The root of all the difficulties experienced by the pupil is to be found in the failure on the part of the teacher to develop the algebra out of the arithmetic. This seems to me of such vital importance that I may be pardoned for dwelling somewhat tediously upon the matter, pleading for the early inclusion of algebraic symbolism in the arithmetic lesson, and offering a few suggestions to those teachers who, whatever text-book they use, agree with me in thinking that some informal acquaintance with algebra is desirable before a systematic course is taken up.

Algebra and arithmetic are indissolubly one. I am not going to attempt a definition of algebra, but, whatever else it is, it is at least a subsumption and extension of the principles made familiar to the pupil in the study of arithmetic. From no point of view can we regard algebra as having any sort of existence independent of arithmetic. Both sciences deal with precisely the same subject-matter. The difference between them is merely a difference in degree of abstraction; one is on a higher level of generalisation than the other. Two important steps are taken by the pupil in the study of numbers: first the step from concrete quantities to abstract numbers, and secondly the step from abstract numbers to those still more abstract numbers represented by algebraic symbols. Thus if I take 9 from 12 the remainder is 3, whether the numbers refer to apples or omnibuses. The *kind* of thing is seen to be irrelevant to a mere numerical issue. This is an important advance in the number-thinking of the young child. If we wish the child to concentrate upon the process rather than upon the result, a further stage of abstraction is necessary. $12-9$, $17-1$, $237-26$, &c., may all be represented by $a-b$. Here the actual magnitudes are irrelevant. In the first step he abstracted from the qualitative differences in the numbers, and in the second he abstracted from the quantitative differences. Concrete arithmetic, abstract arithmetic, and algebra are all in the same line of advance as we pass through various stages of abstraction. And these processes are inevitably intermingled. There is a constant passing from one to the other. The veriest beginner in arithmetic occasionally thinks in purely

abstract terms, and the most symbolic thinker can, if challenged, give as a rule some sort of concrete interpretation to his symbols.

An absurd story is told of an Irishman, who explained his inability to solve the old problem: "If a herring and a half cost three-halfpence, what will a dozen cost?" by saying that he had been trying to figure it out in haddocks. If a person can think numerically in terms of haddocks, he can think equally well in terms of herrings: he is dimly if not fully conscious that the precise kind of thing does not matter. He can easily go a little further, and see that for some purposes even the kind of number does not matter. In this latter case he is really thinking algebraically. From seven men, seven books, seven trees, &c., he arrives at the notion of 7; and from 7, 18, 3, 201, &c., he arrives at the notion of a, b, or x. The child forms this latter concept much earlier than is generally believed. A distinction must be made between algebraic thought and algebraic expression. When a child thinks of "the product of two numbers"—two unspecified numbers, that is—he is thinking algebraically; when he is able to express that thought in the form ab he has made no further advance along the line of abstract thinking—he is not thinking more algebraically than before—he is merely using a more convenient vehicle for that particular kind of thought. For the clumsy symbolism of words he has substituted the more serviceable symbolism of letters. In fact, as soon as a child has mastered the notion of a "rule" in arithmetic he has begun to think algebraically. And since he possesses the thought itself, why withhold from him for so long a period that kind of symbolism which is not merely the simplest means of expressing that particular type of thought, but also the most potent instrument for maintaining and extending it?

The question then arises: When should algebraic symbols be first brought to his notice? A distinction is generally made in the text-books between the letters at the beginning of the alphabet (a, b, c, &c.) and those at the end (x, y, z). The former are said to stand for known quantities and the latter for unknown. That there is a distinction in their general use is unquestionable, although that distinction is not consistently maintained; but surely it is not in any profitable sense the distinction between known and unknown. The quantities are equally unknown in both cases, but in the case of x, y we want to know what they are, and in the case of a and b we do not. The real distinction is one of purpose: the objects of inquiry differ. When we use a, b, or c, the hunt is for a process; when we use x, y, or z the hunt is for a result. When, for instance, I multiply $a+b$ by $a+b$, and show that the product is $a^2+2ab+b^2$, I rest satisfied with this without attempting to fix its quantitative value, even if that were possible. I have shown what operations must be performed with the original terms in order to secure the product. I have, in fact, done nothing more than establish a relationship between the factors and the product in terms of operations to be performed with the given quantities. When, however, I try to solve $2x+3=x+9$, I am searching for an actual fixed numerical value for x. a is an unknown, which I do not wish to convert into the known, because it does not matter; x is an unknown which I do wish to convert into the known, because it is the one thing that does matter. The distinction, as I have already said, does not always hold good. In solving a literal equation, we aim at establishing a relation between the value of x and the value of the other symbols. x, too, serves vicariously for the other class of symbols, for we frequently find it used as the radix in that extremely important class of expression based upon the Hindu system of place value; *e.g.*, $4x^3+7x^2+6x+2$.

Having indicated the two classes of symbols—the a class and the x class—we find the object of our inquiry made more specific. We have not only to decide at what stage in the arithmetic course algebraic symbols should be introduced, but also which of the two types of symbols should be taught first. The older text-book answers the latter question in one way, practical teaching experience in another. The text-book deals with fundamental rules and operations before it touches the equation. And this seems the correct logical sequence. But since the need for symbolisation first becomes obvious in a problem which can be solved by a simple equation, the simple equation is, I submit, the best point of departure for a course in algebra, however simple or however comprehensive that course may be.

Take such a simple problem as this: "What must be added to 19 to make 27?" The simple and natural mathematical expression of this problem is $19+x=27$. Here is a problem the terms of which the pupil can clearly understand. He knows what he is searching for, and when he finds it he will know at once whether it is the thing for which he sought—whether it is the right solution. He is prepared to appreciate any simple device which will enable him to find what he seeks, and will at once see the advantage of using a symbol for the unknown number. The symbolism comes in at the right place—where it is needed. It is a means to an end, and falls naturally into its place as a convenient instrument of thought. The double query can now be answered. The pupil should first become acquainted with algebraic method in the form of the simple equation as soon as he has mastered the four simple rules. I do not mean that the mathematical course should at this point bifurcate into two branches, one to be called arithmetic and the other algebra. The pupil should regard x as not even a naturalised subject in the arithmetical realm, but as a native citizen. This citizen should be allowed to multiply freely within the mother country, and only when their numbers threaten to overwhelm their neighbours should they be drafted off to a separate colony of the name of algebra. Even then there should be frequent commerce between the colony and the mother country.

Other considerations point to the simple equa-

tion as the true algebraic starting-point, whether algebra is taught as I suggest, or whether the study of the subject is postponed until the arithmetic course is nearly completed. It is the first form of algebra of which we have any written record. The race found it easier to solve the simple equation than to elaborate a system of fractions; and what the race found easy the individual will not find hard. The personal experience to which I have already referred also points to the equation as the place of greatest lucidity in the course of example-grinding. The equational method will be found to simplify the arithmetic rules, and to be of enormous value in rendering intelligible the principles of proportion. Finally, a complete system of algebraic training may easily be developed from the simple equation, since the problems may be so devised as to involve in their solution any desired operation with the unknown quantity. The pupil should be encouraged so far as possible to infer the rule from the corresponding rule in arithmetic. Each difficulty as it presented itself would thus give rise to an item of knowledge serving as a key to its solution. And knowledge thus acquired is real, vital, and abiding.

In teaching the principles of the equation to young children, the ordinary balance will be found of great service. By simple experiments with equivalent weights in the scale-pans, the axioms may be abundantly illustrated. As an example of the value of the balance in the solution of a certain class of problems quite apart from the use of symbols, I will instance the following; not that I regard this particular kind of puzzle as a very profitable means of mental discipline, but because it well illustrates the clearness of thought fostered by the equational method: "If a brick weighs 7 lb. and half its own weight, what is the weight of the brick?" If this question is put orally to a class of children of about fourteen years of age, the bulk, if not all, of the answers will be $10\frac{1}{2}$ lb. Even when this is shown to be wrong, the teacher will have the greatest difficulty in getting the correct solution. If, however, a balance is brought in, and a brick, placed in one pan, is shown counterbalanced by 7 lb. and half a brick in the other pan, it will seldom be necessary to proceed any further before the right answer is given. Any difficulty that remains may be cleared up by removing half a brick from each pan. It is not, of course, necessary for such purposes of demonstration that actual bricks should be used, nor even the 7-lb. weight, so long as the substitutes reasonably represent the originals.

After the usefulness of x has been fully realised, a kind of exercise which tends to bring the *operation* into clear consciousness should be introduced into the mental arithmetic lesson; *e.g.*—

A man has 3 florins; how many shillings has he?
" a " " florins; how many shillings has he?
" n crowns " " " "
" p half-crowns " " " "

How far can I walk in 6 hours at the rate of 4 miles an hour?
" " 6 " " a " "
" " a " " b " "
&c.

Still, the order here indicated, with the cheerful dogmatism of one who has tried the system, is not of vital importance, and is not, in fact, followed by the newer algebras, which, however, in each case introduce the equation quite near the beginning of the course.

Although there is a slight difference of opinion to be found in that excellent text-book, "A New Algebra," by S. Barnard and J. M. Child (Macmillan), it is generally agreed that children should be familiarised at an early age with the use of negative quantities. There seems to be a strong prejudice against the use of negative quantities in arithmetic. Even in algebra they were long looked at with suspicion, and not wholly taken into the fold until the days of Descartes. But with the various meanings we can attach to these *numeri ficti* (as they were called in the Middle Ages), there is no reason why a lad who can understand the nature of a debt, the markings on a thermometer, and the simple notion of a straight line having two directions, should not at once commence dealing with negative quantities. Whenever it is found that any device or sign generally monopolised by algebra promotes clearer thinking in arithmetic, the teacher should not hesitate to introduce it. Indices, for instance, are often useful in revealing important relationships.

After graphic illustration of the relation between linear, superficial, and solid units, the children should write out the table thus:

12 in. $= 1$ ft.
12^2 sq. in. $= 1$ sq. ft.
12^3 cub. in. $= 1$ cub. ft., &c.
10 mm. $= 1$ cm.
10^2 sq. mm. $= 1$ sq. cm.
10^3 c. mm. $= 1$ c. cm., &c.

The various powers of 10 should be thoroughly well known, for reasons which will appear presently. The root signs are equally serviceable, although I do not think that the formal rules for extracting square and cube roots should be taught until they have been dealt with algebraically. There is no reason, however, why the factor method of extracting roots should not be known. Factors, indeed, should be freely employed in finding the H.C.F. and the L.C.M., and in the simplification of fractions.

If the above simple suggestions for enriching the arithmetic syllabus by poaching, as some would think, on the algebraic preserves, are carried out, many of the pupil's difficulties in commencing a systematic course of algebra even on the old lines will probably be found to disappear. In my next article I will try to point out what I regard as the weak places in the courses usually laid down.

McDougall's Time Chart Book for History. (McDougall's Educational Company.) 2*d.* net.—This consists of some twenty double pages, each of which is so ruled and headed that the student may insert easily events in "English," "Scottish, Irish, and Welsh," or "General" history against the year in which they occurred for half a century. The last page contains an example of the wished-for result. We should think these "copy-books" would be useful to teachers and their pupils.

THE TEACHING OF LANGUAGES.[1]

By Prof. E. A. Sonnenschein, D.Litt.
Hon. Secretary of the Classical Association and Chairman of the Curricula Committee of the Association.

THE Classical Association has only recently laid its hand to the problem of the teaching of languages in its full import; and I am not speaking without book when I say that the year 1909 will see an important development of our work in this direction. The Association has never adopted a narrow or exclusive attitude towards the teaching of other subjects. It welcomes as an integral part of the school curriculum not only modern languages but also physical and natural science; and I think I may say that time will show that it believes that something can be done to improve the teaching of all these subjects by way of concentration of interest—in other words, by securing that they shall work together, instead of in rivalry or antagonism, for the imparting of a liberal education. I do not mean merely that they should all be recognised as elements of a liberal education, but that they should positively advance one another's aims by direct co-operation. What could be better for the student of classics than that he should have a scientifically trained power of observation? What better for the student of science than that he should have his imagination stimulated and his style clarified by a study of languages and literatures?

The Association stands for two things in particular, which are recognised in its rules as among its objects: (1) the maintenance of the classics as an integral part of a national scheme of secondary education; (2) a reform in the methods of classical teaching. Let me mention one or two of the things we have already done. First, we have made current in a very large number of English secondary schools a reformed pronunciation of the Latin language, which brings Great Britain into touch with the Continent and with our American cousins. Hitherto Great Britain has been a house divided against itself; for whereas Scotland has always adhered to the system of pronunciation which was universally current in the seventeenth century—current not only on the Continent, but in the whole of this country—England has since then allowed itself to fall into a barbaric style of pronouncing Latin, under the influence of changes in the vowel system of English itself. Secondly, we have struck a blow for the literary study of the Greek and Roman classics. It was on January 6th, 1906, that the following resolutions were passed with practical unanimity:

(1) "That in the lower and middle forms of boys' public schools Greek should be taught only with a view to the intelligent reading of Greek authors."

(2) "That the Association petition the Universities of Oxford and Cambridge to take into consideration the abolition of the separate Greek grammar paper at Responsions and the Previous Examination respectively, and the substitution for it of an easy paper in unprepared translation."

In a further report which was issued in 1907 the Curricula Committee took a further step in the same direction by insisting on the literary as well as the linguistic study of Latin. "The ends to be kept in view in the study of Latin are: (1) the intelligent reading of the more important Latin authors; (2) a linquistic and logical discipline."

I now turn for a moment to the future programme, though in speaking of this I am necessarily under some difficulties and limitations. At the last general meeting of the Association a scheme was mooted as to the formation of a committee which should take into consideration and report on a scheme for a uniform and simplified terminology of the grammars of all the languages commonly taught in schools (English, Latin, Greek, French, German), and it is hoped that this movement may lead to an important saving of time and energy which is at present sacrificed in the teaching of several languages side by side. This is, indeed, not a new principle. But it is hoped that by the new departure of 1909 the whole movement may be more broadly based and brought into more intimate relation to the needs of teachers of ancient and modern languages respectively. It is our hope that all the members of the proposed committee will go into the question entirely unprejudiced by any previous utterances of their own on the subject of grammar, and that in making their selection of terms and classifications they will not hold themselves bound to defer to mere tradition or to the pronouncements of learned academies, nor even to the supposed needs of any one language considered by itself; but that they will bear in mind in the first instance the needs of the pupil approaching the study of a second foreign language within a year or two of making acquaintance with a first. What must be his confusion of mind when he finds that a grammatical phenomenon, say in Latin, which is to him, at any rate, indistinguishable from another grammatical phenomenon in, say, French, is classified and named on entirely different principles? Will he not be simply unlearning in one class-room what he has learned in another?

In some cases the phenomena in question may not be absolutely identical; but the differences in their classification and naming really depend not so much on differences in the phenomena themselves as on differences in the points of view adopted by the writers of grammars. This can be easily proved within the limits of one language; for we find among writers of English grammars, for instance, the most astonishing diversity of opinion as to the naming and classification of some of the most familiar facts. This ought to cease in the name of common sense and in the public interest. The waste of time and effort which is involved by the system of each grammarian for himself and God help them all is a very serious loss to the school as a whole and ultimately to the nation—and a loss which need not be incurred. I have said that the

[1] Abridged from a paper read at the North of England Education Conference, Manchester

principle at issue is not a new one, but it has recently sprung into new importance owing to the fact that it has been adopted and put into practice by the Reformgymnasien of Germany within the last few years. I have before me the parallel grammars recently issued for the use of Reformgymnasien by teachers connected mainly with the famous Goethe-Gymnasium of Frankfurt—Reinhardt, Wulff, Bruhn, Roemer, Banner, Prigge. Other books belonging to the same movement might also be mentioned; *e.g.*, the Latin Syntax of Müller and Michaelis. The impetus given to the whole movement by this recent German development is sure to be important and to react with beneficial results upon this country.

I believe that we may find in a reform on these lines the true solution of the language difficulty which lies at the basis of certain proposals which have recently been made for the lightening of the curricula of our secondary schools. If once we could remove the inconsistencies of grammatical terminology which bewilder a student who has to deal with several languages simultaneously, as every pupil in our secondary schools has to do in the later stages of his course, we should not be inclined to think it necessary to lighten the school curriculum by throwing all foreign languages but one overboard. The Classical Association, at any rate, is convinced of the desirability and the necessity of retaining Latin as an integral part of the curriculum of the average boy at a secondary school.

In its last report the Curricula Committee has presented evidence arrived at by inquiries from teachers representing very various types of schools as to the value of even a short course of Latin as a training in thought and expression, and as a means towards the mastery of English and the acquisition of modern foreign languages; and a resolution to this effect was adopted with unanimity at the recent general meeting of the Association in Birmingham. The wave of anti-classical opinion seems, indeed, to have spent its force, and the question at the present day is not really whether Latin should be retained as an integral part of secondary education, but rather as to how effete methods of teaching it may best be abolished.

I confess that when I have come across specimens of the miserable results sometimes turned out by our secondary schools in the persons of pupils who have devoted many years to the study of Latin, and in whom the only result seems to be a general woodenness of mind and an incapacity to express themselves clearly even in their own language—I hope this is a handsome enough concession to Prof. Armstrong—I have sometimes been sceptical as to the disciplinary value of the subject. Yet my scepticism has really been only skin deep, because I am convinced that the fault lies, not in the subject, but in the methods by which it has too often been taught—methods which either led to a very poor result, or demanded more time than can be spared at the present day to produce a result which is really worth having. The problem is to discover methods whereby the good results of Latin study may be secured without the sacrifice of an inordinate amount of time. It is not impossible that under the old-fashioned system a certain amount of time was wasted. And it should be borne in mind that classical studies, like all other studies, suffer if the minds of the pupils are denied an all-round development.

LA SOCIÉTÉ FRANÇAISE DES CONFÉRENCES À L'ÉTRANGER.

By JEANNE MORIN.

I HAVE often heard about different methods of learning modern languages, but very little about how not to forget them, once mastered. Is it not a pity that a knowledge which cost us so much trouble should be allowed to slip so soon out of our memory and to become useless? Why, for instance, drop our bowing acquaintance with French? We have managed to get over the difficulties of irregular verbs, and to become friendly with the capricious past participles which agree, or disagree, in the most fanciful way; but, after leaving school, instead of turning our hardly gained acquaintance into a lifelong, trusty friendship, most of us let it alone; and when a kind hostess introduces us to a French visitor, we, who formerly were supposed to speak French beautifully, do not take up our task, partly from shyness, partly from real deficiency.

Secondary-school teachers have, on the whole, a wider interest in such study; their daily duty obliges most of them to teach at least the rudiments of French; and, besides, they realise to some extent what a powerful stimulus to the intellect is the meeting, through a foreign language, with a national genius.

Moreover, in order to keep up their French, those who can afford it take advantage of their holidays to cross the Channel and to spend a few weeks in France. During their study they pick up somewhere a French book, generally a work of fiction, as being easier to understand, and conscientiously set to work to master it. Should the book be good, it will be all right; but nine times out of ten it is not; and such reading improves neither the morals nor the French of the reader. The reader, of course, intended to choose a masterpiece; but nowadays advertising takes more and more the place of true criticism, and leads many into error.

Besides, if we rely on the statements of the well-known French writer and lecturer, M. Hugues Le Roux, which quite agree with those of the late Congrès contre la Pornographie held in Paris a few months ago, most of the foreign publishers—generally German, it is said—for the sake of destroying the good name of France, sell stupid books, unknown to the educated French, and sometimes still more misleading, not even written by a French pen. This misfortune is very prejudicial to both the French and British nations; many English prejudices against

the French people have no other grounds than those I have indicated; and to prove it I will relate one fact out of a possible thousand.

A headmaster of a county school in Durham believes as thoroughly as if it had been stated in Holy Writ that on Shrove Tuesday no girl could avoid, but by staying at home, being kissed by strange men in the streets of Paris; and he also believes, on the authority of a funny *Punch*-like French paper, that gentlemen wear corsets to get slim waists! At first French people laughed at such nonsense; now they realise the danger of such misrepresentations and desire to put an end to them.

Such are the reasons why La Société française des Conférences à l'étranger has drawn up a scheme to make known to readers in other countries which French works are worth reading. Such an undertaking meets a real need, and famous persons, such as M. Bourgeois, formerly Prime Minister of France, M. Picavet, Secrétaire du Collège de France, M. Boutroux, membre de l'Institut, and M. Lecomte in France, and Dr. Roberts and Mr. Hartog, of the University of London, give it support.

In order to get into touch with all classes of persons interested in French people and their literature, the society pursues its aims in many ways. First, a place is given, in the booklet it publishes, to the latest news in the world of ideas, in order to enable English readers to follow easily the movement of ideas in France and become acquainted with modern French life. Secondly, instead of the brief, often too partial, advertisement, a careful analysis is given of those new French books worth reading, so that the reader may be able to choose what suits his needs best. In this way it is hoped, when all unnecessary stumbling-blocks have been cleared away, that the British reader will have nothing to prevent him from taking many a happy ramble in the pleasant land of French wit and fancy.

The society also indicates a much-needed course of reading suitable for young boys and girls. Teachers and parents who are responsible for the mental training of youth know what a difficult question the choice of suitable French literature is, and what incalculable harm a badly chosen book can do. Experienced teachers know what gross blunders are often made with the best intentions in the world. To conscientious educationists the list drawn up by the society will be a very real help.

Another beneficial source of activity of the society is the periodical lecture, which will do much to dispel wrong impressions about France and to raise the standard of French studies. A little co-operation and organisation will minimise the expense attached to the delivery of such lectures; in fact, the cost will be very little compared with the advantages of the scheme. It only needs some public-spirited person, with a little initiative, to develop the undertaking. For instance, if the county of Lancashire decided to have its regular French lectures in connection with the society, the schools of Manchester would arrange to have a lecture one day, and those of Oldham on another day, and so on.

A special feature of these lectures is the selection of lantern-slides, which not only make the discourses easier to understand, but, by calling the eye to the help of the ear, afterwards aid the memory very materially. Another important point to be noted is that when the lecturer reads or recites, a facsimile of his words is thrown on the sheet in large characters; so that once more, in true pedagogic style, ear and eye work in partnership.

While stimulating the pupils to fresh exertion, these lectures prove an invaluable aid to the modern language teachers. There is no difficulty in learning French grammar in England; in fact, many educated English persons know it as well as the French people—sometimes better. Conversation, again, however intelligently carried on, does not suffice, as the vocabulary employed is necessarily limited. Persons who have passed some months abroad know how few words the average individual uses in conversation, and how much supplementary work must be done really to master a language. In these lectures, English students of French will have the advantage of hearing a large modern vocabulary, and of familiarising themselves with different French voices, since the lecturer will be different each time.

With what additional interest will the British student read a French work after having been informed thoroughly as to its writer and its history by a well-known lecturer, steeped in the keen intellectual life of Paris. Indirectly, too, England will influence France for good. Who knows what clearer visions of calm happiness our versatile lecturers may bring back with them from England? Now is the time. Never was English influence so generally felt in France; we French read your authors, we play your games, we drink your tea, and even try to eat your pudding! It is only by knowing each other thoroughly that the *entente cordiale* will ripen into a warm friendship that will make for the lasting peace and progress of the world.

The booklet of the society will be sent post free to all desiring to become members, and members will also have the right to travel at reduced fares when coming to Paris for the society's annual meeting. The society will undertake to buy and despatch to members in England any French works of which they may have need. Subscriptions are as follows, to be paid annually in advance to the treasurer of the society, Monsieur Camailhac, professeur, Kremlin, Bicêtre (Seine): Membres actifs, 4*s*. a year, or £4; membres donateurs, 16*s*. a year, or £16; membres bienfaiteurs, £2 a year, or £40. Those who wish can become life members by paying twenty times the annual subscription (as above). The hon. secretary, Mlle. Jeanne Morin, 15, rue de Suisses, Paris, will be pleased to give further information if desired.

CONTINUATION SCHOOLS IN SWITZERLAND.

IN the middle of last December the Federal *Industriedepartement* issued an important circular relating to industrial continuation schools in Switzerland. It has been a matter of common knowledge that these schools often fail to keep abreast of contemporary requirements, and that they suffer, more especially as regards the teaching of civic duty, by competition with the general continuation school and the *Bürgerschule*. The Federal Board desires the abolition of the general continuation school, which really only revises the work of the primary school, and the extension of the special continuation school as a means of promoting trade and commerce.

The direct influence exerted on the continuation schools by the Central Government is small, but Federal grants are welcome, and Cantons will therefore listen to Federal advice. The circular suggests that the industrial continuation school should be open for forty weeks in the year, that it should have an upper and a lower division, in each of which there should be a minimum of 240 hours of instruction per annum. This amount may be reduced by one-third if drawing is not taken. The programme would contain obligatory and optional subjects, the former being taken on weekdays before 8 p.m., and due attention being given to workshop and laboratory practice.

In carrying out these plans the aid of the Federal Factory Acts will be invoked. According to the new Bill young persons in factories will have to attend classes in work-hours for five hours per week, and this regulation will be enforced in small home trades as well as in large houses. At the same time the employer will be treated reasonably. In the busy season the school will be closed, and it will be possible to make up lost time in the slack season; and the hours of meeting will be chosen so that a minimum of time will be lost in going to and fro.

Whilst thus providing for the pupil, the new proposals do not forget the importance of the teacher. In small centres the primary-school teacher is not equal to the task of conducting the continuation class, except in theoretical subjects and in drawing. Even in these subjects his skill may be mediocre. The difficulty may be got over by appointing visiting teachers. The *Industriedepartement* expects the head and the visiting teachers to be trained at technical institutes, where special classes will be formed for this purpose, the course lasting from one and a half to two years. Other teachers will be trained in special short courses, which would last about ten weeks and be divided into two parts: a general course lasting six weeks, and a special course of four weeks. Exemption from attendance at the general course may be granted, and the two courses need not be taken consecutively. The special course would be in drawing, and the student would have to choose between three classes: (*a*) for mechanics; (*b*) for builders; (*c*) for decorators.

To aid the Cantons in carrying out these proposals the Federal Government is prepared to pay two-thirds of the cost of training, and in return it reserves the right to demand that an unsatisfactory teacher shall be sent to a training course.

AN ORGANISED EDUCATIONAL PROGRAMME.[1]

(1) NO local authority or other body should be empowered to grant total exemption from attendance at school to children under fourteen years of age.

(2) Provision should be made for compulsory attendance at day or evening (preferably day) continuation schools for young persons above the age of fourteen years, who are not attending craft or secondary schools, for two to four hours a week during two years of forty weeks in each year. Pupils attending evening continuation schools between these ages should not be permitted to commence work before eight a.m. on those days on which they attend the schools. The number of hours during which pupils attend part-time day or evening continuation schools should be counted as "hours of employment" for the purpose of the Acts dealing with the employment of young persons.

(3) There should be established in all educational areas a sufficient number of craft schools with a two years' course for boys and girls between the ages of about fourteen and sixteen years. Due regard should be paid in these schools to the continuance of the general education of the pupils, but special provision should be made for sound scientific and technical training in relation to the industries or requirements of the district. The aim of these schools should be to provide preparatory training in handicraft for pupils who propose afterwards to follow industrial or commercial careers or to manage households intelligently. The fees should be low and there should be scholarships giving free tuition, travelling and maintenance allowances, graduated according to the ages of the scholars. These schools might also provide for the continuation classes referred to in Clause 2.

(4) Local education authorities should be urged to establish or aid in establishing an adequate supply of secondary schools of a high educational type. These schools should have highly qualified staffs adequately paid, and should be administered by a board of governors or managers. No effort should be spared to make these schools thoroughly efficient, and to this end the curriculum followed should admit of some amount of variation. Where the majority of pupils remain to eighteen years of age a higher standard on the purely academic side could be aimed at than in the case of schools

[1] Report of the Education Committee of the British Science Guild presented at the annual meeting of the Guild on January 22nd. The committee consists of the following members: Sir John Cockburn, K.C.M.G. (chairman), Mr. J. Easterbrook, Mr. H. W. Eve, Mr. Ernest Gray, Sir Philip Magnus, M.P., Miss L. Manley, Mr. C. T. Millis, Sir Alex. Pedler, C.I.E., F.R.S., Mr. A. T. Pollard, Prof. T. Raymont, Miss C. E. Rigg, Mr. J. J. Robinson, Miss K. Wallas, Dr. R. M. Walmsley, Mr. Sidney Webb, Mr. J. Wilson, Mr. J. H. Yoxall, M.P., and Prof. R. A. Gregory (hon. sec.).

where the bulk of the pupils leave at sixteen years of age or thereabouts. To secure that the best minds in the primary school shall pass into the secondary school, there should be a sufficient number of free places and maintenance scholarships to render secondary education accessible to boys and girls capable of benefiting by it who propose to remain at school until the completion of at least a four years' course from the date of entry.

(5) A primary-school certificate should be introduced which would serve as a passport to the craft school and the secondary school. School certificates should also be granted to pupils who work satisfactorily through the courses at the craft school or at the secondary school. The certificates should be based not upon examinations, but chiefly upon reports by the teachers as to the ability of the pupils to profit by higher courses of instruction.

(6) The matriculation examination of any British university, and the secondary-school leaving certificate, certain requirements being satisfied, should qualify for entrance to any British university or technical college, and to the various professional courses, without further examination and in lieu of the present preliminary examinations.

(7) School records and the reports of teachers should at every stage supersede largely the present system of estimating ability by examinations. The award of scholarships should be based largely upon the reports of the teachers of the schools which the pupils are attending at the time of their promotion. School leaving certificates should be awarded only to pupils in schools certified as efficient for that purpose by a responsible inspecting authority, and a list of these schools should be published. Schools in which this privilege was abused should be removed from the list. By placing upon the teachers the responsibility for nominating pupils for certificates or scholarships, the credit of the school would soon secure that only the most capable or promising pupils would have their passage facilitated to places of higher learning. In all examinations the teacher should be associated with the external examiner.

(8) In every public or private primary or secondary school, the instruction in all branches of the curriculum should be so given as to accustom the pupil to careful observation and experiment, whatever may be the specific nature of the subject that is being studied; and to this end not only should there be a proper amount of laboratory and workshop practice, but the scientific spirit of the laboratory and workshop should, so far as possible, be employed in the ordinary class-room. In this way the school would provide the best kind of preliminary training for industrial life, and would also ensure that those who subsequently receive a university education shall bring to the work which will devolve upon them in various fields of activity, including the administration of public departments, an adequate training in scientific method.

(9) An arrangement should be arrived at whereby a satisfactory report as to educational efficiency, made by a responsible inspecting authority, would in ordinary cases render similar inspection during the same school year unnecessary.

(10) Local authorities, governing bodies, and parents should realise that the salaries at present paid are in most cases quite inadequate to secure a supply of highly qualified and capable teachers. The opportunities for advancement offered by other careers attract from the teaching profession many men, who by attainment and aptitude would promote the educational welfare of the nation. The conditions of service, salaries, and outlook of assistant teachers, whether engaged in the work of primary, secondary, or technical education, are in general most unsatisfactory, and unless they are improved they must fail to attract or retain the services of many men and women best qualified for the profession of teaching. A high standard in education can only be attained by generous provision for those who do the work, both in their active and declining years. Until this is recognised, it is futile to anticipate progress in procedure or success in any organic educational system, or to obtain from the present efforts and expenditure on education a sufficient return.

PERSONAL PARAGRAPHS.

PLACE AUX DAMES.—The Girls' Public Day School Trust has recently appointed headmistresses to two of its thirty-one schools. To succeed Miss L. Silcox at Dulwich High School is appointed Miss C. Winifred Matthews, M.A. Dublin, of Newnham College, who took the mediæval and modern language tripos at Cambridge. She was formerly an assistant-mistress at Wimbledon High School, and has since been a peripatetic teacher in the service of the West Riding County Council. (Such peripatetic teachers often have quasi-inspectorial functions which have given trouble to more than one education authority and caused heart-burnings among teachers.)

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Miss S. Barratt succeeds Miss A. Silcox as head of East Liverpool High School. She also has been connected with Wimbledon School as second mistress.

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Miss J. F. Dove, the successful headmistress of Wycombe Abbey School—a foundation just getting into its teens—is one of those praiseworthy but rare individuals connected with school work who keep their minds fresh by taking an active part in municipal and local politics. Her enthusiasm for High Wycombe has not been dulled by her recent rebuff in connection with the local mayoralty. She has now headed a subscription list with a contribution of £41 for increasing the usefulness of the free library of High Wycombe. Miss Dove has been a member of the Council of the Classical Association. She

has a strong staff of assistants, and, from what I hear, understands the art of encouraging them to excel in their several lines of teaching. Thus, during the twelve years of the school's existence, three mistresses have been allowed to absent themselves for purposes of special study for a whole term, and six others for half a term. I have Miss Dove's own word for it that she considers that "a term off with full salary after five years' work would be a right and reasonable thing to give." This is the kind of spirit we should like to see increasing among our education authorities. The gain to educational efficiency would be such as to make the extra expense incurred look very trifling indeed. But I hope to have something to say on this point a little later in this year. The school over which she rules is most pleasantly placed on the northern slope of the high hill which looks down on High Wycombe in its cosy valley. The view south from the crest of the hill is a splendid panorama of the Thames valley, Windsor Castle looming in the grey distance.

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DOUBTLESS Miss Dove fully appreciates the valuable results that may come from a proper co-operation between schools and public libraries. Charles Lamb, Coleridge, and Leigh Hunt have left it on record how much they owed to the nearness to Christ's Hospital of good lending libraries. That impressive speaker, Mr. R. Blair, the chief executive education officer of the London County Council, has been emphasising this point of view at a distribution of certificates gained at the Library Association's examination. He said that a committee of librarians, teachers, and inspectors had considered the relation between the public libraries and schools of London. One of their resolutions was that a children's room should be established at all public libraries. On a minute's reflection it is obvious that our public libraries are great educational forces that are not at all adequately exploited. The case is a common one—expensive plant acquired, but not thoroughly and systematically used.

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MR. T. H. KNIGHT, who was educated at King Edward VI. High School, Birmingham, and Clare College, Cambridge, has been elected, comparatively young, to the headmastership of Wilson's Grammar School, Camberwell. He took honours in classics and history, and has had teaching experience at Elizabeth College, Guernsey (a good number of men I have met have gained experience at Elizabeth College), and more than seven years at the City of London School. Wilson's Grammar School will be having its tercentenary in 1915.

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ABOUT a year senior to him is Mr. Norman L. Frazer, who, after a great variety of experience in private and other schools, including five years at Whitgift, Croydon, has been elected to the headmastership of Batley Grammar School, Yorks, which was founded three years prior to Wilson's, Camberwell. He has done good work for publishers in connection with English history and literature; and, if I remember rightly, he was a member of the A.M.A.'s committee which drew up a syllabus for the study of English in secondary schools, a syllabus to which it seems probable that the Board of Education's "Suggestions" owed something.

* * *

ANOTHER past member of the A.M.A., Mr. Coxhead, now headmaster of Hinckley School, spoke some sound sense at one of the meetings of the English Association. In reply to a statement that English composition ought to be the centre of English teaching, Mr. Coxhead advanced some opinions which I cordially endorse. He held that English literature should not be made a subject of written examination for children less than thirteen years of age. I have myself given this thing a thorough trial, and know how futile is the attempt to get paper work from children of this age and to estimate it in marks when written. The danger of making composition the centre of English teaching is that English would be deposed from its rightful place as an æsthetic subject appealing readily to the taste and imagination. There are not wanting forces which make for this deposition, and among them is the kind of literature textbook which still persists in making literature a peg on which to hang skeletons of philology and dryasdust erudition of all sorts.

* * *

OF the Warden of Bradfield, this year's president of the Educational Science Section of the British Association, I have the following impressions. I have heard him at many headmasters' conferences, and learnt to associate with his name fluent expression and broad educational ideas. It has been my good fortune to be twice at Bradfield: once to witness a charming performance of the "Alcestis" in the chalk-pit, and once to attend the conference over which Dr. Gray presided. I forget the agenda of that year, but remember sitting next to Mr. Abdy Williams and hearing him discourse of Greek music and his forthcoming "Life of Handel." Beyond this I brought away from Mr. Leach's "History of Bradfield" an idea of the one-man character of the early fortunes of the college. Of Dr. Gray's work in connection with the Mosely Commission readers of THE SCHOOL WORLD will have good knowledge.

ONLOOKER.

The Electra of Sophocles. Abridged from the larger edition of Sir R. C. Jebb by G. A. Davies. lviii + 194 pp. (Cambridge University Press.) 4s.—We have already noticed several earlier volumes of this school edition. The present volume is of the same kind, omitting the translation and the more controversial notes, keeping the explanatory notes. There is all here that most boys or undergraduates can want for their examinations.

HISTORICAL STORY BOOKS.[1]

By F. J. C. Hearnshaw, M.A., LL.D.
Professor of History in the Hartley University College, Southampton.

IT seems almost an impertinence at this late date to write a review of the charming books which the literary skill of Mrs. Marshall, the artistic ability of Messrs. Forrest and Skelton, and the publishing enterprise of Messrs. T. C. and E. C. Jack have put into the hands of our children, and—when we can persuade our children to lend them to us—our own.

Everything that is romantic in our Island story, everything that has the fascination of adventure in the records of the expansion of the British Empire, has been diligently sought out and collected within the covers of these attractive volumes. Just as it was Macaulay's ambition that his "History of England" should in sheer interest hold its own in competition with the latest novel, so is it Mrs. Marshall's hope that her selection of stories may find a place "beside 'Robinson Crusoe'" in the children's library. We sincerely trust that Mrs. Marshall's hope may be realised literally, for it is exactly with "Robinson Crusoe" that these books should be classed. They are works in which fact and fancy, probability and improbability, truth and legend are mingled with that delightful irresponsibility which is characteristic of children, and must be present in all books that are intended to appeal to the infant mind.

But just because they are such admirable books of the "Robinson Crusoe" type, we deplore their titles, object to their larger pretensions, and dread the consequences of the unfitting uses to which they may be put. Take, for example, the first of the two—"Our Island Story." It is called in the sub-title "A Child's History of England." It is nothing of the sort. It contains, it is true, particularly in its later sections, a fair proportion of authentic history well narrated, but this is due solely to the happy accident that what is fact chances in certain cases to furnish the kind of story that children love. There has apparently been, on the author's part, no effort after discrimination. The sole test of suitability has been, not historic truth, but dramatic "interest." Hence we have here presented to us not only such veracious narratives as those of the battle of Hastings, the rebellion of Harry Hotspur, and the career of Joan of Arc, but also the wild legend of the coming of Arthur, and the more-than-doubtful traditions of Alfred and the cakes, Gilbert Becket and Rohesia, Richard I. and Blondel, Edward I. and the poisoned dagger, and so on. These, of course, are excellent as stories, and every child ought to hear or read them. But they have no place in even a child's "History of England."

Mrs. Marshall herself evidently feels that she is falling between the two stools of history on one hand and mere story on the other. For she says in her preface: "You will find some stories that are not to be found in your school books—stories which wise people say are only fairy-tales and not history. But it seems to me that they are part of our Island Story, and ought not to be forgotten." She is right in contending that they ought not to be forgotten; but she is wholly wrong in claiming them as "part of our Island Story" in any other sense except that in which "Robinson Crusoe" and "Alice in Wonderland" are parts of the same story, viz., that they are products of the imagination of our island race.

If, then, these books are treated as they ought to be, not as histories, but merely as collections of fairy-tales, legends, and stories designed to stimulate the historic sense, to excite interest, and generally to prepare the way for history, well and good. But if they are used as though they constituted in any way a child's history of England and the Empire, nothing but error, confusion, and educational disaster can result.

It is matter for regret that Mrs. Marshall did not make an effort to sift the true from the false. If she had put the legendary and doubtful into one section and the well-authenticated into another section, then indeed her work might have justified its title and have served its double purpose. But even then it is questionable whether, except in the case of very young children, history should be identified with a string of anecdotes. There is a tendency at the present day to rebound too far from the history which was nothing but names and dates. It is right to strive to excite interest; but it is fatally wrong to eliminate everything of the nature of painful discipline. If education is to be an epitome of life and an adequate preparation for life, it must not be unduly cleared of all its crosses. Much of its virtue comes from difficulties overcome, from unpleasant tasks accomplished, from toils the end of which is not apparent performed in a spirit of obedience and of faith.

The gospel of "interest" is good, and Herbart was an evangelist; but there is grave danger lest his evangel, as preached by enthusiastic but unbalanced disciples, should degenerate into an enervating sentimentalism. A correspondent in The School World of January last (p. 40) propounded the opinion that "with regard to most questions of progressive educational theory, the schoolboy is the final court of appeal." If we were to apply a principle of this sort to the choice of food or medicine or clothing for our children, we should soon be made to realise what pernicious nonsense it is. It is not less so when it is applied to subjects of study and methods of instruction. It is not necessarily good for children to have what they like; it is possibly good for them to have some things occasionally precisely because they do *not* like them. French without tears, history without dates, music without scales and exercises, geometry without the *pons asinorum*, may well

[1] "Our Island Story: a Child's History of England." By H. E. Marshall. 523 pp. (T. C. and E. C. Jack.) 7s. 6d. net.
"Our Empire Story." By H. E. Marshall. 493 pp. (T. C. and E. C. Jack. 7s. 6d. net.

tend to produce a flabby race fit only for the Island of the Lotus Eaters. Some time or other in every worthy career the difficult will have to be faced and the disagreeable done. The schoolmaster must not wholly neglect the disciplinary preparation.

SCHOOL POETRY.

SCHOOL poetry, granted that it is in careful hands, is one of the school experiences that stick. Geography goes; history goes faster; but poetry has a habit of making a niche for itself in the child-brain; and where teachers revise their work, the favourite verses cannot be dislodged. In no department of school books is more care being taken than in this; but, even so, a great deal is published which belongs to the youth of sixteen and is offered to the child of eleven. The "Sesame Poetry Books"[1] are admirably graded: perhaps there is too little of the lighter verse in the more advanced sections; difficulties of copyright spoil all anthologies. The "Sesame" books contain, as does "The Boy's Book of Poetry,"[2] a great deal that is quite unfamiliar. In the "Boy's Book," Clough and Lyte and E. V. Lucas and George Herbert are names unknown to older anthologies; indeed, we could spare a good deal of Tennyson and Byron, which children must come across later, for the unhackneyed beauties of lesser lights.

Much more ambitious are "Poetry for Upper Classes"[3] and "The Call of the Homeland."[4] In the former, a selection made by an ex-inspector of schools, a good deal is left to the teacher; with a few exceptions the pieces are classics, and the notes, though sufficient, are unattractively arranged. The highest forms might well use the book. In the latter we have, as we should expect, something quite new. The title is a little puzzling, but we suppose that it covers patriotic, rural, and ethical poems. The range of the work is great, the copyright pieces very numerous, and the grouping admirable. We can imagine that a boy or girl who keeps a commonplace book would fasten on many passages, feeling that it would be long before they were seen again. The compilers have a definite aim—to save the schoolboy from forgetting all that "England" means. Anthologies are good; but who shall judge what causes are now going to the making of a slack England? "Deafened with tumults, How canst thou hearken?" Surely the appearance of a book like this, with a preface which might have been longer and might have been repeated in Book II., shows the real alarm which is growing wherever people think.

In the same spirit, but more closely historical, are "Poems and Ballads of English History"[1] and Mr. Dowse's edition of "Poetry Illustrative of English History."[2] All these books ought to tell, if fairly used; the editors have chosen pieces from a wide area, but no books are of avail if the spirit is wanting in the teacher and in the schools.

Mr. Brett has edited "Representative English Poems," chiefly for Indian students. The book belongs to a well-known series, and its editing and annotation are very judicious. We notice that the "Ancient Mariner" contains the line, "With throats unslacked, with black lips baked." This is neither 1798 nor 1800 nor (we think) 1817. Attention should be directed to the note (p. 320) which correctly states that "awaits" is the reading in the famous line, "Awaits alike th' inevitable hour." The text, though, has "await" (p. 83).

PRE-BIBLICAL SYRIA AND PALESTINE.[3]

WE lately reviewed an excellent handbook of Egyptian history, written for the unlearned reader; here is another of the same series, which describes the early history of Syria and Palestine as far as Egyptian records and archæology throw light on it. This book, like the first, is written clearly and simply, and it should prove a valuable aid to the Bible student.

The work begins with an account of the Hycsos or Shepherd Kings of Egypt, who overran the civilised land as the Dorians overran Greece, and established their power there for a long time, according to Josephus 500 years, according to modern scholars at least 200. This happened more than 2,000 years before Christ, and it is a great wonder that Egypt was ever able to recover, as she did, her ancient civilisation. A brief description of Syrian geography follows, with excellent photographs of Hermon and Lebanon. The evidence of recent excavations is now brought in to throw light on the earliest inhabitants of Syria and their relations with Babylonia, especially with the great Hammurabi. What is now known of Gezer, its city and its customs, will be new to most readers, since those who take the *Quarterly Statement* of the exploration fund are so remarkably few. Next, Syria is treated as an Egyptian province, and the contents of the tablets of Tell-el-Amarna are drawn upon for the foreign relations of Amenophis III. and his successors. In the reign of his son and successor, the King's attempted reform of Egyptian religion was accompanied by a Syrian revolt under Hittite influence. The tablets afford a remarkable picture of racial and other conditions in this time, and have quite superseded the views hitherto held. Dimly the events of this distant past stand out before us, and then the

1 "Sesame Poetry Books." A Series of Seven. (Arnold.) *2d.* each.
2 "The Boy's Book of Poetry." In three parts. (Macmillan.) *4d.* each.
3 "Poetry for Upper Classes." By E. A. Helps. (Bell.) *1s. 6d.*
4 "The Call of the Homeland." Books I. and II. Arranged by R. P. Scott and Kath. T. Waller. (Blackie.) *1s. 6d.* net each.

1 "Poems and Ballads of English History." Two Books. (Pitman.) *5d.* each.
2 "A Book of Poetry." Edited by G. Dowse. Part III. (Macmillan.) *9d.*
3 "Egypt in Asia." By G. Cormack. With 24 full-page illustrations, 23 illustrations in the text, and 5 maps. xvi+280 pp. (Black.) *7s. 6d.* net.

characters of some of the actors in them, such as the fearless Prince Ribaddi and Abdcheba, Prince of Jerusalem. Many familiar names meet us: Abimelech, Prince of Tyre, the Chabiri (Hebrews?), the Syrian pirates, the Shirdani, who seem to have left traces in the names Sardis and Sardinia.

We now come to more familiar ground, with the expeditions of Rameses I. and Rameses II. to reconquer Palestine, and the great battle of Kadesh. With the later fortunes of the Egyptian dynasties, the Hittite alliance, the Philistine invasion, we cannot linger. Nearly all the subject-matter of this book is fresh to the ordinary reader; but the story is well told, and the book gives such an account of the earlier history of Syria as is indispensable to the intelligent study of the Bible.

SCHOOL PLAYS.

By Fanny Johnson,
Formerly Headmistress of Bolton High School.

THOSE of us who believe in the drama as an instrument of education—and there are an increasing number of such persons, practising and theoretical—are often confronted by the difficulty of choosing suitable material. French, German, Latin, and Greek *classical* drama we have, of course, always with us. And in both girls' and boys' schools the performance of a Shakespeare play, in whole or in part, is perhaps of almost too common occurrence. Various societies, too, that seek to combine drama with edification, if not with commercial profit, have been started from time to time with more or less (usually less) satisfactory results. The English Association and the London Schools Musical and Dramatic Association both aim to affect the standard of taste in the directions indicated by their respective titles. The great Pageant movement has no doubt stirred the ground, even in remote parts of the country. Too little has, however, been made of the literary, dramatic, and theatrical material that these shows have called forth and proved to exist. What seems now most to be needed is a combination of individual and local effort, with widespread information as to what has already been achieved. Central control of too rigid a kind is neither good for art nor morals. At the same time, local ambition may be quickened and local efforts aroused by the report of distant fame.

All good teachers have something in them of the actor, and not a few something of the dramatist. Hence many attempts have been made by teachers themselves to provide plays for the special cast and audience that they are best acquainted with. But in making out a list of plays suitable to be performed by or in the presence of school children, I am struck by the superiority both in quantity and quality of the plays provided for the use of girls, by their mistresses, as compared with those provided for boys by their masters. Even plays specially adapted for boys have for the most part been written by women.

Many teachers endeavour to make use of the dramatic instinct in connection with almost every lesson that comes under the head of the humanities. We find children taught in the history lesson, *e.g.*, to enact (out of their own heads) the scene of Elizabeth and Sir Walter Raleigh's cloak, or the death of Wat Tyler; in the geography lesson, the discovery of the West Indies by Columbus; the poem that is learnt in the literature lesson is instantly dramatised in free and easy fashion; while French and German *scenes* are the stock-in-trade of the teachers of these languages. The learning by heart of a *foreign* play is indeed one of the surest, most rapid, and pleasantest ways of acquiring a vocabulary, and the so-called modern, or "reformed," method of teaching French and German is based almost entirely upon this fact. The same method is applied in some schools—notably at the Perse School, Cambridge, under Dr. Rouse's headmastership, to Latin, and even, I believe, to Greek. The thing may easily be overdone. And reaction may appear in the revival of Puritan protests against the stage, or in an outcry for strenuousness in school as in grown-up life. The dangers of dramatic representation must be apparent to every thinking person—even if experience had not taught us where they lie. One safeguard or caution, however, alone is sufficient to obviate these dangers. Drama, from the present point of view, is narrative in dialogue form. Now dialogue may be used merely to impart information, after the manner of Mrs. Markham's "History." In such case it is merely harmless. Or it may be used, again harmlessly, in order to impress the outlines of a fine story upon childish minds, as in the innumerable attempts at dramatising the old fairy stories, "Beauty and the Beast," "Cinderella," &c.

The motto, then, for schools must be, "Good sentences, and well pronounced." To acquire an easy conversational vocabulary in foreign languages, it is permissible to let pupils learn trifling little pieces about hairdressers and restaurants. But teachers sometimes overlook that the same method need not be applied to the native tongue. Every word or phrase in English that is learnt by heart under the direct guidance of a teacher should have some kind of literary quality. I do not mean, of course, to advocate a Johnsonian rotundity of phrase. There is a correct conversational style as there is a correct oratorical or emotional style. But we must aim at style or form of some sort, *i.e.*, at lovely *sounds*, to which beautiful, appropriate motion of the body will naturally lend itself. That is the aim of the above-named associations, and of others which live unknown but do none the less useful work. "The play's the thing," and the play consists primarily of "words, words, words."

In the lists which follow I have been guided in my selection by a preference for literary even more than strictly dramatic merit. Especially in elementary schools, the pupils of which presumably

start in life with a restricted, not to say debased, vocabulary, it is necessary to insist on purity of language. The temptation for them as well as for pupils of a higher social class is to utilise for public display the most trivial and even vulgar pieces. The fairy cantata, with its silly words and still sillier tunes, has too long been the vogue at prize-day performances. And there is the less excuse for this, since the supply of material suitable for children of the Kindergarten or first and second standards is more excellent and abundant than in other grades. My lists are arranged in each section, so far as possible, in order of difficulty, beginning from the easier pieces. The division into subjects shows at a glance the quarter from whence material must be sought for any particular purpose, though the subject-classes—*e.g.*, classical and historical, or mythical and fairy—inevitably overlap to a certain extent.

Omitting reference to standard classical plays, I begin with an advanced section suitable for the upper forms (V. and VI.) in both boys' and girls' schools, or for old boys' or girls' societies, which are peculiarly adapted to maintain an interest in good drama both among present and past pupils. Work of a dramatic form that is being studied as literature can hardly be completely understood, and certainly not fully appreciated, without either witnessing or taking part in its performance. There is, however, in this connection much to be done by translation and adaptation of classical pieces. Greek plays in translation retain much of the impressiveness of the original, and a good compromise presents itself here for schools in which Greek can never be part of the regular curriculum. The costume is particularly well suited for a one-sex performance, and much archæology and history may be incidentally acquired. Editions arranged by an accomplished actor, such as Miss Fogerty, or an accomplished scholar, such as Mr. Cornish, of the "Alcestis" of Euripides show that to modernise is not necessarily to vulgarise. Both these, as well as the majority of the plays on my lists, have been tested by performances which did not depend entirely for their success upon the friendly attitude of audiences. I have seen one or two beautiful performances of the "Antigone" of Sophocles in English done by high-school girls, and one of the "Iphigeneia in Tauris" of Euripides in English by the girls of a private school in London. I may be permitted to direct attention to my play of "Croesus," taken almost verbatim from Mr. G. C. Macaulay's translation of Herodotus, which was charmingly played by a private mixed school in Cambridge not long ago, but which is specially adapted for boys, containing eight good boys' parts, as well as any number of opportunities for walkers-on. The "Eros and Psyche" and the "Persephone" of Miss Skeat introduce the classical stories to young children for whom the plays are meant, while the more ambitious pieces on the same subject by Miss Purdon (in verse) are excellent in every way for older girls. Translations from Aristophanes, with due expurgation, naturally suggest themselves for boys, who are popularly, though erroneously, supposed to prefer knockabout farce to more serious work. The Aristophanes in Messrs. Dent's Translation series might be adapted for this special purpose.

The next section contains quite admirable Latin plays and dialogues by modern writers in a style which familiarises pupils with the Latin words for things of daily life, and makes them realise the Romans as people who had other occupations besides that of "conquering Britain." Here again, if performed in costume, the pieces are equally suitable to both sexes, though, of course, specially for boys. Erasmus's colloquies are not strictly plays, but can, at any rate, be performed with *action*; and Mr. Edwards's selections are in every way adapted to that end. "Cothurnulus," that happy thought of Prof. E. V. Arnold, contains a little play of "The Ides of March," which correlates itself splendidly with Shakespeare's "Julius Caesar." The playlets of Miss Orange, "Dona Reginae," are delightfully active, and add much life and spirit to the junior Latin lesson. Miss Purdon's charming "Egyptian Cinderella, or the Shoes of Rhodopis" stands by itself as an introduction, suitable for upper forms, to the Egyptian mythology.

Coming to later periods I find a little set of pieces of varying difficulty on Church and Christian history. The clever "Coming of the Dawn," by Miss Debenham, is a very simply written pageant in verse of the introduction of Christianity into England, based upon the Anglo-Saxon Chronicle stories of St. Augustine, Edwin and Paulinus, and so on. "Claudia," the story of the martyr of that name, in more difficult verse, has been actually performed by the villagers in Derbyshire, for whom it was composed. Though written from an Anglican point of view, many schools not strictly "Church" might use these with advantage.

There is a lack of material, outside Shakespeare, for illustration of modern or European history. The little play of "Robin Hood" was recently played as a pastoral by young schoolboys in Cambridge. "The Story of the Armada," in prose, makes an effective display of Elizabethan costume, suitable for boys and girls from twelve years of age onwards. I may again venture to refer to my own "Dramatic Scenes from History" for reading or performance by middle forms. Some of the pieces—*e.g.*, "The Battle of Poictiers" from Froissart—have exclusively male parts. Miss Fogerty's Chronicle Players recently acted some of these scenes ("Sir Thomas More" and "Queen Elizabeth at Kenilworth") at Cambridge, and again at Eton College. The "books" of several of the Pageants can be obtained from the local booksellers, and may be utilised to great effect for historical scenes. Selections are also possible from Marlowe's "Edward II.," Browning's "Strafford," Rowe's "Lady Jane Grey," Lyly's "Endymion, and other Plays" (illustrative of

Elizabethan social life, peculiarly suitable for boys), G. L. Dickinson's "From King to King" (Charles I. period), as well as from Shakespeare's historical plays.

In the mediæval and romantic class, the pastoral "In the Days of Chaucer" is a clever adaptation of Chaucer's Prologue. "Dante and Beatrice" contains scenes from the "Vita Nuova"; "The Queen's Jest" is a little story of Marie Antoinette at Little Trianon; and "The White Butterfly" is founded on the love-story of Mary Beaton (one of the Queen of Scots' four Maries). This section needs costume, and lends itself to large schools, where a number of "supers" can be used.

The large class of modern and literary adaptations from standard novels and poems includes three versions of "Cranford," each of some merit, but that of Mr. Oldershaw the most completely dramatic. Of the two versions of "The Princess," Miss Fogerty's is in every way superior. All Miss Pagan's adaptations from Dickens are beyond praise. They are thoroughly dramatic and complete in themselves, while adhering closely to the original. The hints on costume and properties are practical and experienced, and all can be played by boys with effective make-up for the female characters. Other adaptations from Dickens, "The Christmas Carol" and "The Cricket on the Hearth," are possible, but not so well adapted for youthful players. The adaptations from Scott's novels by Miss Fogerty, in "Scenes from the Great Novelists," and the "Duologues from Jane Austen" by Rosina Filippi, are well known, and chiefly suitable for small classes in girls' boarding schools. "The Critic" is admirable for boys. The humour appeals to them, and the women's parts are easily played. The same may be said for selections from "The Rivals," "The School for Scandal," "The Good-natured Man," and "She Stoops to Conquer."

I need not further refer to the light modern plays than by stating that most of them have much charm, and all are, of course, free from objection. They serve to amuse idle hours in boarding schools rather than for edification. The list might be added to indefinitely, but I must pass on to the next section, fairy and Kindergarten plays, which form suitable introductions to drama as well as to fairy lore for young children.

Nothing of this kind has been done better than Miss Corner's little pieces in rhyme. The story is not tampered with or vulgarised, yet jokes of a simple kind occur such as appeal to children. The dramatic construction is artless, but the pieces can be played in a more or less elaborate fashion as regards costume, music, scenery, &c., according to the resources at disposal. The rhyme is easily learnt by heart, though it is necessary to guard against sing-song delivery. Miss Amy Whinyates' "Fairy Plays" are also excellent. They are in the same kind of simply rhymed verse, but arranged with more practical knowledge of the stage. Her literary gift is superior to Miss Corner's, and her verse is sometimes worthy of the name of poetry.

Space fails me except to refer briefly to the little French and German plays and scenes, all of which are well adapted for their purpose of imparting knowledge of ordinary vocabulary, and most of which are well known. Mr. Abel-Musgrave's French and German dramatic scenes are peculiarly useful for boys, and are cleverly based upon scientific principles. Miss Partington's little plays are dramatic, though their French is not quite impeccable. Mrs. J. G. Frazer's pieces, as well as those of Lady Bell (Mrs. Hugh Bell), have stood the test of long usage.

Finally, I am tempted to insert a list of sacred plays, which, though debarred by our present ununfortunate educational disputes from actual school use, are eminently suitable for performance by old girls' and boys' societies in the presence of upper forms and parents.

My lists are by no means exhaustive; they represent a selection of possible and various forms of drama, and indicate the directions in which material may be sought, and for which authors and publishers may well cater.

(B)=chiefly male parts or suitable for boys.
(G)= ,, female ,, ,, girls.
(C)=suitable for large numbers (crowds).
(P)=pastoral, *i.e.*, suitable for outdoor performance.

Classical and Mythical.

(*a*) *Translations and Adaptations.*

(P) "Eros and Psyche." By B. M. Skeat. (De La More Press.) 6*d*.

(P) "Persephone, or the Daffodil." By B. M. Skeat. (Norland Press.) 6*d*.

"Persephone." By L. F. Purdon. (Thomas Burleigh.) 1*s*.

"Psyche." By L. F. Purdon. (Thomas Burleigh.) 1*s*.

(B) "Croesus." By Fanny Johnson. (Dent.) 6*d*.

"Antigone of Sophocles." Translated by A. S. Way. Arranged by Elsie Fogerty. (Sonnenschein.) 6*d*.

"Alcestis of Euripides." Translated by A. S. Way. Arranged by Elsie Fogerty. (Sonnenschein.) 6*d*.

"Alcestis of Euripides." Translated and adapted by G. W. Cornish. (Fairbairns.) 1*s*.

(B) "Ajax of Sophocles." Translated by R. C. Jebb. (Bowes and Bowes.) 2*s*.

"Sophocles." Translated in Morley's Universal Library. (Routledge.) 1*s*.

"Iphigeneia in Tauris." Translated by Dr. Verrall. (Bowes and Bowes.) 2*s*. net.

(B) "The Persae of Aeschylus." Morley's Universal Library. (Routledge.) 1*s*.

(B) "Odysseus, The Return of." Arranged from Homer by M. Barrows. (Houghton, Mifflin.) For private circulation.

(B) "Aristophanes." Translation Series. (Dent.) 2*s*. 6*d*.

"The Plays of Euripides." Translated by Gilbert Murray. (Allen.) 1*s*. each.

(B) "The Flight of Aeneas." Arranged from Virgil's "Aeneid" by Mabel Barrows. (Boston: G. H. Ellis.) For private circulation.

(*b*) *Short Latin Plays by Modern Writers.*

"Dona Reginae." By B. Orange. (Blackie.) 4*d*.

(B) "Colloquia Latina" and "Altera Colloquia

Latina." By Erasmus. Edited and adapted by G. M. Edwards. (Cambridge University Press.) 1s. 6d.

(B) "Cothurnulus." By E. V. Arnold. (Bell.) 1s.

ANCIENT HISTORY.

(G) "An Egyptian Cinderella." By L. F. Purdon. (Thomas Burleigh.) 2s.

EARLY CHRISTIAN AND CHURCH HISTORY.

(C) "The Coming of the Dawn." By M. H. Debenham. (National Society.) 8d.

(C) "Claudia, the Christian Martyr." By G. E. Mason. (Sonnenschein.) 1s. 6d.

HISTORICAL.

(B) "Robin Hood, a Pastoral and Musical Play." By Gladys Davidson. (Egerton.) 3d.; music, 1s.

"A Royal Rose of Merrie England." (Henrietta, daughter of Charles I.) By A. Whinyates. (Dean.) 1s.

"Gabrielle, or the Red Cap of Liberty." By A. Whinyates. (Dean.) 1s.

"The Story of the Armada." By Amice Macdonell. (League of Empire.) 6d.

"King Lear." For young actors. Abridged by F. Spenser. (Dean.) 1s.

"Dramatic Scenes from History." By Fanny Johnson. (Arnold.) 1s. 6d.

"Charles I." By Mary Russell Mitford. (Dicks' Standard Plays.) 1d.

Marlowe's "Edward II."

Browning's "Strafford."

Rowe's "Lady Jane Grey."

(B) Lyly's "Endymion and other Plays." Selections.

(B) Shakespeare's "King John," "Richard II.," "Henry V.," "Henry IV.," "Julius Caesar," "Coriolanus," "Macbeth."

(B) "From King to King." By G. L. Dickinson. (G. Allen.) (Out of print.)

(C) The books of the following Pageants: Sherborne, Warwick, Bury, Oxford, St. Albans, Romsey, Dover, Winchester, Gloucester, Chelsea.

MEDIÆVAL AND ROMANTIC.

(B) "Sir Rupert, or the Young Cavalier." By A. Whinyates. (Dean.) 1s.

(P) "In the Days of Chaucer, a Pastoral Interlude." By E. E. Ohlson. (Blackie.) 6d.

"Dante and Beatrice." By E. Underdown. (Sonnenschein.) 6d.

"The White Butterfly." By M. Barrows. (Boston: G. H. Ellis.) For private circulation.

(G) "As You Like It." Arranged for performance in girls' schools by Elsie Fogerty. (Sonnenschein.) 6d.

(G) "The Queen's Jest," &c. By Elsie Fogerty. (Sonnenschein.) 6d.

MODERN AND LITERARY.

"Prince Bulbo" (from "The Rose and the Ring"). By A. Whinyates. (Dean.) 1s.

"Scenes from the Great Novelists." By Elsie Fogerty. (Sonnenschein.) 6d.

(G) "Scenes from Cranford." By M. F. Hutchinson. (Blackie.) 6d.

(G) "Cranford at Home." By Lucian Oldershaw. (Dent.) 6d.

(G) "Scenes from Cranford." By Beatrice Hatch. (French.) 6d.

(P) "The Lady of the Lake." Adapted by C. M. Jocelyn. (For loan in typewritten MS.)

"The Lady of the Lake." (Dicks' Standard Plays.) 1d.

"Duologues from Jane Austen." By Rosina Filippi. (Dent.) 2s. 6d.

"Arrangements from Dickens," by I. M. Pagan (Dent), as follows: (B and G) (1) "Town and Todgers," 1s.; (2) "Mr. Pecksniff's Pupil," 1s.; (3) "Pecksniff's Proposal," 9d.; (4) "The Gentleman in the Next House" (from "Nicholas Nickleby"), 1s.; (5) "Mr. Boffin's Secretary" (from "Our Mutual Friend"), 1s. 6d.

(G) "The Princess." Adapted from Tennyson by L. Rossi. (Dent.) 1s. net.

(G) "The Princess." Adapted from Tennyson by E. Fogerty. (Sonnenschein.) 6d.

(B) "The Critic." By Sheridan.

"The Good-natured Man" and "She Stoops to Conquer." By Goldsmith. (Globe Edition.) (Macmillan.) 3s. 6d.

(B) (1) "A Christmas Carol," by C. G. Barnett; (2) "The Cricket on the Hearth" (adapted from Dickens), by Albert Smith; "Haroun Alraschid," by T. Dibdin. (Dicks' Standard Plays.) 1d. each.

(B) "Pyramus and Thisbe" (from "Midsummer Night's Dream"). Arranged for boys in French's "Comic Reciter." 6d.

"The Lover's Battle" (from "The Rape of the Lock"). By C. Graves. (Moring.) 5s.

LIGHT MODERN PLAYS.

"The Merrythought Plays." By Myrtle B. S. Jackson. (Skeffington.) 2s.

(G) "The Australian Cousin" and (P) "The Masque of the Woodlands." By M. F. Hutchinson. (Blackie.) 6d. and 4d.

Carpet Plays (about thirty), 6d. each (Dent), including "The Mirror," by Rosina Filippi; "In the Italian Quarter," by Rosina Filippi; "A Japanese Romance," by M. Hutchinson; "Death or the Emperor?" by Elise Cooper, &c.

(G) (1) "Charades and Plays"; (2) "Schoolroom and "Drawing-room Plays," second series, by Grace Toplis. (Gill.) 1s. 6d. each.

(B) "Dramas for Boys." By Miss Keating. (French.) 1s.

The St. George's Windsor Series of Plays: "The Pride of Bergenbard," "Doria's Birthday," "The Baron's Holiday," "Many Happy Returns," "The Iron Band," "The Pirate of Panora." By F. M. Bridge. (Year Book Press.) 6d. each. Music by Sir W. Parratt and M. Akerman.

FAIRY AND KINDERGARTEN PLAYS.

Dean's 1s. plays for young people, including "Beauty and the Beast," "Whittington," "Cinderella," "Puss in Boots," "Mother Goose," "Children in the Wood," by Miss Corner; "Aladdin," "Fairy Rosebud," "Little Dewdrop," and "The Princess and the Pirate," by A. Whinyates.

"The Magic Hook," &c. By M. L. Thomson. (Marshall.) 1s.

(P) "Birds of a Feather." By J. Adair Fitzgerald. (Dent.) (Carpet Plays.) 6d.

(G) "When I'm Grown Up." By J. Adair Fitzgerald. (French.) 6d.

(B) "When I'm a Man." By J. Adair Fitzgerald. (French.) 6d.

(P) "The Masque or Pageant of English Flowers." By M. F. Hutchinson. (Blackie.) 6*d*.

"The Organ Grinder" and "Old Pez." By Maria Edgeworth. (French.) (Juvenile Plays.) 1*s*.

FRENCH PLAYS.

"Scènes Enfantines." By K. Weber. (Arnold.) 1*s*. 3*d*.

"Dans le Royaume des Fées." By Violet Partington. (Marshall.) 9*d*.

"Les deux Fées." By Violet Partington. (Marshall.) 9*d*.

(1) "Le petit Poucet," (2) "Le petit Chaperon rouge," (3) "La Belle au Bois dormant," (4) "Fleur de Neige," by Ellen C. Hainsselin. (Blackie.) 4*d*. each.

"Le petit Grand'père et la petite Grand'mère." By K. Weber. Translated by A. Bourdass. (Blackie.) 4*d*.

(1) "Cendrillon," (2) "Le Chevalier du Guet," by E. Magee. (Blackie.) 4*d*. each.

"Fables en Action." By V. Partington. (Dent.) 1*s*.

"Le Chalet Porcinet." By Mrs. J. G. Frazer. (Blackie.) 4*d*.

"French Plays for Schools." By Mrs. J. G. Frazer. (Macmillan.) 1*s*. 6*d*.

"Le Théâtre à l'École." By Mrs. J. G. Frazer. (Macmillan.) 1*s*.

(B) "French Dramatic Scenes." By C. Abel-Musgrave. (Arnold.) 2*s*.

"Théâtre de la Jeunesse." By Souvestre. Edited by W. Herbert Hill. (Blackie.) 8*d*.

(B) "Maître Pâtelin." Edited by M. Ninet. (Black.) 6*d*.

GERMAN PLAYS.

"Grossväterchen u. Grossmütterchen." By K. Weber. (Blackie.) 4*d*.

(1) "Froschkönig," (2) "Das Märchen vom Dornröschen," by Henny Koch. (Blackie.) 4*d*. each.

"Vier Kleine Lustspiele." By K. Weber. (Arnold.) 1*s*. 6*d*.

"Kleines Haustheater." By Lady Bell. (Arnold.) 2*s*.

"German Dramatic Scenes." By C. Abel-Musgrave. (Arnold.) 1*s*. 6*d*.

BIBLICAL AND MORAL.

(B) "Abraham and Isaac." Old Miracle Play. (De La More Press.) 6*d*.

"Bethlehem." By Laurence Housman. (Macmillan.) 1*s*.

"Sacred Dramas." By Hannah More.

"Everyman." Old Morality. (Bullen.) 1*s*.

(G) "Eager Heart." By Miss Buckton. (Methuen.) 1*s*. net.

"Christmas Play." By the Rev. H. Benson. (Longmans.) 2*s*. 6*d*.

"Samson Agonistes." By Milton.

"Pilgrim's Progress." Adaptations.

Twenty Illustrations of New Zealand Flora, with Notes. (Wellington: John Mackay.)—Teachers of botany in this country who are able to secure a set of these illustrations, recently issued by the Education Department of New Zealand, will find them of no small interest and value in lessons on geographical distribution. Only the dullest imagination could fail to be aroused by the giant ferns, lilies, buttercups, forget-me-nots and groundsels (a species of *Senecio* attains a height of thirty feet), and other marvels which the pictures portray. And these monsters by no means exhaust the interest of the series.

HISTORY AND CURRENT EVENTS.

WHICH form of government is more tolerant to minorities? Is an autocratic or a popular government more likely to tolerate a community which differs widely in its ideas from that of the great majority of their fellow-subjects? We ask these questions because we hear that Jews in Finland and Christians in Persia are anxious as to the result of the constitutional struggles in those countries. Finland is struggling for local self-government against the centralising tendencies of the Tsar and the authorities of St. Petersburg. Persians are wanting Parliamentary government instead of the traditional despotism of the Shah. Our sympathies go naturally to the struggling parties in each case. But they also go to the minorities, Jewish or Christian, who fear for the triumph of "popular" principles. We are told that one of the reasons which induced Edward I. of England to banish the Jews in 1290 from this country was that he believed that "what concerns all should be approved by all," and that "all" did not approve of the system by which the Jewish community had been the protected chattels of the Crown.

WE have on more than one occasion in these columns directed attention to communities to which the name of States is not generally applied, which we cannot, however, in any scheme of political science refuse a recognition, as communities wielding political, or at least pseudo-political power. A series of events lately occurring in the football world supplies us with another opportunity of illustrating the nature of States, the subject of political science. As the British Empire is arranged for governmental purposes on the basis of a federation, so it is arranged for football purposes on the basis of local control and management, and within the same columns of our daily papers we have the varying views of the English Rugby Union, the Scottish Union, the New Zealand Union, and the action of the Australian Union. For the purpose of regulation, the various clubs of these countries have united into societies to which we cannot deny, in a certain sense, the name of States, since their decision will be obeyed by their subjects, or refusal will take the form of rebellion.

SIMILARLY, the various Churches of the world are, in a certain sense, States. It is true that, like other voluntary associations, they have not the ultimate appeal to force to compel obedience to their commands, but that ultimate appeal is not the whole reason for obedience to ordinary States. The State which entirely depended on that sanction would not be likely to last long. And therefore we note what was previously unknown to us, that there is a Church of Syrian Christians in Travancore and Southern India which has a patriarch, Mar Ignatius Abdallah, who, on a visit to England last Christmas, was received by King Edward, and favourably entertained by members of our own Established Church. This gave rise to rumours about possibilities of reunion, but we are told in reply that the Patriarch is most anxious to maintain his own independence and that of his Church. He wishes his Church, which consists of native Indians, to be independent of both England and Rome.

"ONE touch of nature makes the whole world kin," and the earthquake in Italy which deepened the gloom of the end of last year afforded, and still affords, many opportunities of showing that humanity is quite independent of international jealousies. Perhaps the most remarkable is the visit of Pius X. to a hospital in Rome, whither some of the

sufferers had been taken. It is the Vatican hospital, and belongs to the Pope, but stands outside the narrow limits which are all that has, since 1870, been left to the Popes as sovereign territory. We are not aware of a single occasion on which, until last month, either Pius IX. or his successors have, since their election, passed beyond those limits. They have regarded themselves as prisoners to the Italian Government, which in that year possessed itself of what had until then been the remains of the "temporal power" of the Papacy. But the natural wish to show sympathy to his unfortunate guests has proved too much for Pius X., and for once he, to his great honour, has ignored international jealousies and visited "Italy."

ITEMS OF INTEREST.

GENERAL.

IT is a pleasant duty to be able to report an improvement in the French paper at the London Matriculation examination last January. Until recently the grammar questions were too much of the nature of puzzles, especially the answers to questions based on the text of the translation. Moreover, when the examiners wished tenses and numbers changed, they chose a piece of the text on another page, so that a candidate spent much valuable time in turning the paper backwards and forwards; whereas, now, an entirely different piece is given, which is printed in its proper place. The question on word formation, with its alternative of metre, is a welcome change to the phonetics and homonyms formerly asked. That it is impossible to conduct an oral examination on paper is *une vérité de M. de la Palisse*; but formerly the examiners endeavoured to serve two masters, and failed in pleasing either the old grammar teachers or the new methodists. The obvious solution would be to initiate a *viva voce* in modern languages, and although the difficulties of organisation would be very great, yet it ought to be possible for the officials who introduced oral examinations in the higher examinations some ten years back.

THERE is a danger that even the most careful examiner does not always succeed in avoiding—and that is, in setting pieces of unseen that it is probable some candidates have translated before. This danger is naturally greater for classical than for modern language examiners, but the latter sometimes nod. For instance, at the London University External B.A. of last October, the first French paper consisted of two pieces of translation, one into English and the other into French. As chance would have it, both pieces are such good examples of style that they have appeared in books that have considerable circulation among students. The former was a piece of Chateaubriand describing the sun sinking into the sea, while the latter was a piece of Macaulay's "Clive" describing the attack on Arcot.

THE recent report of the Royal Commission on the Poor Law deals, among many other matters of grave importance, with the question of unemployment. We welcome the recommendation intended to cope with the serious results of the disposition of boys to plunge into remunerative labour, which, when manhood is reached, leaves them of little or no value in the labour market. The report suggests that between 70 and 80 per cent. of boys leaving elementary schools enter unskilled occupations. The majority report recommends that boys should be kept at school until the age of fifteen; that exemption below this age should be granted only to boys leaving to learn a skilled trade; that there should be improved facilities for technical education for boys after they leave school; and that the Board of Education should provide a different curriculum at the elementary schools, the atmosphere of which is now uncongenial to a career of manual labour. So far as the last recommendation is concerned, the question arises: what form should the "different" curriculum take? A hopeful sign of the times is the growing importance attached to "practical" studies by those in charge of elementary schools, and we are glad to know that many well-planned experiments, designed to evolve a thoroughly suitable form of elementary education, are being conducted in various parts of the country. But the ideal system of instruction has yet to be found; and it may be hoped that, while encouraging every form of sensible experiment, the Board of Education will not act precipitately or run the risk of repeating any of the expensive mistakes made by education authorities at the time of the passing of the Technical Instruction Acts.

THE last monthly meeting of the spring term in connection with the Geographical Association is to be held on March 26th, at 8 p.m., at the London Day Training College, Southampton Row, London, W.C. Mr. H. B. Wetherill, of the Royal Masonic School, Bushey, will lecture on "The Educational Value of Geography as a School Subject." Mr. J. L. Holland, secretary of education to the County Council of Northamptonshire, will preside. It is hoped there will be a large attendance.

A MEETING of the London branch of the Historical Association will be held at University College, Gower Street, London, W.C., on March 12th at 7.45 p.m., when a discussion will take place on "The Use of Illustrations, Lantern-slides, &c., in the Teaching of History." The discussion will be opened by Mr. Graham Wallas.

THE eleventh annual meeting of the Moral Instruction League was held on February 6th in the Medical Examination Hall, Victoria Embankment, London, when the president, Prof. J. S. Mackenzie, and Prof. Millicent Mackenzie delivered addresses on moral education, the former on "The Task of the Teacher" and the latter on "The Training of the Teacher." The annual report of the League records substantial progress. Of 327 local education authorities in England and Wales, more than 100 have taken some definite action in providing for moral instruction in their schools. Of these, about sixty have provision for more or less systematic moral instruction. About forty have a time set apart for the moral instruction, and about fifty have a more or less detailed syllabus in connection with it. During the year the first International Moral Education Congress, held at the University of London in September, and the publication of the volumes of reports of the international inquiry into moral instruction and training in schools, both of which have been actively assisted by the League, have raised the question of moral education in schools to one of international significance. During the year, also, the native State of Mysore, India, has introduced moral instruction into all its Government schools and has adopted all the books of the League. Two new handbooks of moral lessons have been issued for the League during the year, two others have appeared in new editions, and the League has also published a return, compiled from official documents, in regard to moral instruction in elementary schools in England and Wales.

AT the monthly meeting of the School Nature Study Union, held at the College of Preceptors on January 29th, Mr. W. Williams, chief officer of the L.C.C. botany scheme, Avery Hill, delivered a lecture on "School

gardens, their nature and management." Tracing the history of school gardens, he said that Germany led the way. Schleswig-Holstein started the movement in 1810, followed by Nassau and Prussia in 1819, the idea being commercial rather than educational. It was not, however, until 1885 that a purely educational bias was given to the instruction, when Switzerland added school gardening to the curriculum of students in training colleges. In Austria, at the present time, there are about 20,000 school gardens. The movement in the United States has made characteristically rapid progress. While in England the school garden may comprise but a few square yards, in the States from two to three acres of land are attached to the school, and frequently a staff of trained horticulturists is maintained for the purpose of instruction. In Great Britain the movement is of recent origin. Here, as on the Continent, the early intention was the making of gardeners and not the training of citizens, and the "utility garden" was the result. County Council control, however, has brought about a change in this respect, since gardens are no longer dependent on Government grants. In London there are now about 140 school gardens, 130 of which are in connection with elementary schools, and supported either by the County Council or by non-provided school managers. The size of the garden varies from three acres—the largest—to a few square feet, and the cost of upkeep of each school plot from about three guineas to 15s. per annum. The largest is at Smith Street, Kennington, affording gardening facilities for eight schools. The advantages claimed for this arrangement of combined school garden over the local garden are that the opportunities for nature-study are multiplied, and that the children, in respecting the property of other children, are trained to respect public property.

The recent report of the Council of the Bristol University College shows that the educational activity of this western institution is well maintained. Encouraging progress has been made in the direction of obtaining a Royal Charter for the incorporation of the proposed University of Bristol, and it should not be long before Bristol and the west of England are provided with a well-endowed, modern university. The development of the work of the day training colleges in connection with the scheme has been very satisfactory. The number of certificated teachers in training is now 114 men and 125 women. We notice that, for tutorial purposes on the men's side, the fine building of the deaf and dumb institution in the vicinity of the college has been procured. The council of the college is hopeful also that the adjoining counties of Gloucestershire, Somersetshire, and Wiltshire will undertake the provision of hostels for teachers coming from these areas for the purposes of professional training. At the last meeting of the committee of the University it was announced that Lord Winterstoke is prepared to give an additional £15,000 towards the University. This, with the £20,000 he has already given, makes Lord Winterstoke's contribution to the fund £35,000. Mr. E. C. Wills has also just contributed £10,000 to the University fund, which is thus raised to practically £200,000.

The Visual Instruction Committee, appointed by the Secretary of State for the Colonies, has issued for various parts of the Empire a series of seven lectures on the United Kingdom, illustrated by lantern-slides. The edition, which was prepared for the Indian Government, is now made available for use in this country. The lectures, written by Mr. H. J. Mackinder, have been published on behalf of the committee by Messrs. Waterlow and Co., and may be obtained, with or without the illustrative slides, from Messrs. Newton, 3, Fleet Street, E.C.

The recently published class-lists show that the total number of candidates entered for the Cambridge Local examinations held in December last was 12,548, exclusive of 2,831 candidates examined at colonial centres. In the senior examination, 1,009 boys and 1,195 girls passed, 82 boys and 14 girls being placed in the first class. Sufficient merit was shown by 545 boys and 220 girls to entitle them to exemption from one or both parts of the Previous examination. Of the junior candidates, 2,234 boys and 1,785 girls passed, the numbers placed in the first class being 194 and 24 respectively. In the preliminary examination 1,476 boys and 1,033 girls satisfied the examiners.

In The School World for August last (vol. x., p. 287) we published an article dealing with an experiment in rural secondary education by Mr. William Aldridge, headmaster of Shepton Mallet Grammar School. Mr. Aldridge has sent us a copy of his ninth annual report on the agricultural and horticultural instruction given in his school during 1908. The report shows that the financial position of the school continues weak, and last year's working, in spite of rigorous economy, has entailed a loss approaching £50. The school has no income from its endowment, and the somewhat increased grant given by the Board of Education seems to be of less benefit than was to be anticipated, coupled as it is with the regulation which demands a minimum of 25 per cent. of free places. The headmaster points out that the action of the Board in fining the governors £15 because a number of farmers' sons are kept away from school to work on their farms for two or three weeks during haytime is open to criticism, seeing that the object of the school is to train boys to become practical farmers. An application to the Board for an augmented grant on account of the experiments in connection with rural secondary education was refused. Among the outdoor demonstrations given during 1908 may be mentioned those in pruning and grafting given by the county instructor in horticulture in the headmaster's garden, the inconclusive experiments with Prof. Bottomley's "nitrobacterine," the spraying demonstrations, and the means taken to exterminate the black-currant gall mite. The report shows conclusively that excellent work in the direction of educating farmers' sons through the agency of agricultural science is being carried on at Shepton Mallet.

It appears likely that there is a career of great usefulness before the newly organised American Federation of Teachers of the Mathematical and Natural Sciences. We have received a copy of its first Bulletin, which explains the purposes of the organisation and contains also a notice of its annual meeting at Baltimore in connection with the recent meetings of the American Association for the Advancement of Science, with which the Federation is affiliated. The Federation now has a membership of more than 1,600, and is the most representative body of teachers of science and mathematics in America. Seven previously existing associations of teachers of science and mathematics already have joined the Federation formally, and fourteen others have the matter under consideration. The Federation proposes to undertake investigations and reports on such matters as the bibliography of science teaching and the history of science; the best means of publication for new material of interest to teachers of science;

the best method of securing the most favourable conditions for science teaching, including a share in the shaping of college entrance requirements. Already the Federation has begun work by undertaking the compilation of a bibliography of the literature on the teaching of science and mathematics. The list is to include books, articles in periodicals, scientific journals, association reports, and so on.

THE forty-second volume of the Agricultural Statistics, 1907, Part IV. (Colonial and Foreign Statistics), which has now been issued by the Board of Agriculture and Fisheries in the form of a Parliamentary paper (Cd. 4445), contains figures relating to the agriculture of all parts of the British Empire and of all foreign countries for which official returns are available. The statistical information it contains should prove invaluable to teachers of geography who require material on which to base practical exercises for their pupils. As indicative of the kind of particulars with which the volume is crowded, we may give one set of facts which may be gleaned from its tables. The wheat-fields of Europe amount in the aggregate to about 120,000,000 acres, and the wheat area of the British Empire extends to about 36,000,000. In Europe 47 per cent. of the total is found in Russia, while in the British Empire India accounts for 62 per cent. The cultivation of wheat has during the past twenty or thirty years remained almost stationary in western and central Europe, but in Russia and Hungary it has greatly extended. In Russia (*ex* Poland) an increase from 29,000,000 to 49,000,000 acres is recorded since 1881, and in Hungary during the same period the wheat acreage increased from 6 to 9½ million acres. During the same period the wheat area of the British Empire (excluding India) has increased by about 3½ million acres, an extension by about five million acres in Australia and Canada having been partially set off by a loss of nearly 1½ million in the United Kingdom and New Zealand.

WE have received from Washington a copy of the report of the U.S. Commissioner of Education for the year ending June 30th, 1907. The Bureau of Education received returns from more than 10,000 different institutions, and an examination of these particulars leads to the conclusion that the number of secondary- or high-school pupils enrolled in all schools and colleges in the United States was 961,786 for the year under review, representing a gain of 37,387 over the total for the preceding year. The public high schools alone had an enrollment of 751,081—a gain of 28,389. The number of secondary-school pupils in both public and private institutions in 1890 was 367,003, or about 5,900 to the million of population; in 1895 the number had increased to 539,712, or 7,900 to the million; in 1900 the number was 719,241, or 9,500 to the million; while for the year 1907 the number of secondary-school pupils aggregated 961,786, or about 11,250 to the million population, or more than 1 per cent. The percentage of secondary-school pupils attending public schools continues to increase steadily, and the number attending private schools to decrease; while in 1890 68·13 per cent. of the total number of secondary-school pupils attended public high schools, the proportion in 1907 was 88·55 per cent.

THE January number of *Science Progress* contains several articles somewhat less technical in character, and in consequence more intelligible to the average reader, than many which have appeared in previous issues. Mr. Malcolm Burr gives an enthusiastic description of the Kent coalfield, and is very optimistic for the future. Some wood-destroying fungi are described by Prof. A. H. R. Buller, as well as recent methods of timber impregnation. Prof. Armstrong advances in simple form his views on the chemical behaviour of water. Other articles deal with chlorophyll, the ductless glands, vertebrate palæontology, and Palæolithic races.

SCOTTISH.

THE Education Department, recognising the necessity of bringing prominently before school boards and managers the salient features in the new Education Act, proposes to issue a series of explanatory circulars. The first of these, Circular 417, deals in a general way with the main provisions of the Act, while those which are to follow will deal more specifically with the question of the medical inspection of schools and pupils, compulsory continuation classes, bursary schemes, and the financial aspects of the measure. In the present circular the Department directs attention to the provisions regarding school attendance, which enable school boards to issue attendance orders without having recourse, as heretofore, to a court of summary jurisdiction. Reference is made to the powers conferred on boards to make the granting of exemption from school attendance to individual pupils after the age of twelve dependent on a prescribed amount of attendance at a day school or continuation class. In the case of country districts, where there is at certain seasons of the year an abnormally heavy demand for outdoor labour, it is pointed out that exemption from school attendance might be made in certain cases at these times and seasons, while for the rest of the year full-time attendance at the supplementary courses of the day school might be required. The circular also deals with the question of the education fund and the pensions and tenure of office of teachers.

MR. HALDANE, Secretary of State for War, speaking last month in his constituency on the Education Act, said that it did not accomplish all that they wanted. It did not give them big educational areas; and he believed in big areas, because they brought with them big ideas about education. But the Act was a remarkable step forward, and it would be the fault of the Scottish people themselves if they did not utilise the wide powers now for the first time placed at their disposal. Unification of the national system of education, with the university at the top and with the elementary schools at the foundation, was the order of the day. He believed that in a few years it would be impossible for anyone to say, no matter how removed he might be from the great centres of population, that his son or daughter had not had a chance of getting the very best education that could be given.

THE Secretary for Scotland and Lady Marjorie Sinclair gave a reception in the Royal Scottish Museum, which was attended by more than 2,000 guests. Though not so nominated in the invitation, the function was clearly meant to signalise the passing of the Education (Scotland) Act. Having regard to the far-reaching character of that measure, no one will be inclined to question the appropriateness of celebrating the occasion in this unique manner. The gathering was one of the most representative and distinguished ever brought together on educational or semi-educational grounds. In addition to representatives of the various educational interests throughout the country, the Bench, the Bar, the Church, and the Army were fully represented. Colour was given to the scene by the brilliant academic robes worn by professors and teachers. Even the gay dresses of the ladies paled before these full-toned relics of barbarism, as Herbert Spencer would probably have called them.

The late Dr. Thomas McKie, advocate, Edinburgh, has left the residue of his estate, which is expected to amount to £80,000, to the University Court of Edinburgh University for the purpose of developing and encouraging scientific and medical research, and of extending the teaching and study of English and modern languages.

A large and representative meeting of technical teachers in Scotland was held in the Glasgow and West of Scotland Technical College on January 29th in order to discuss the advisability of forming a local branch of the Association of Teachers in Technical Institutions. Dr. James Clark, Kilmarnock Academy, presided. Mr. T. T. Rankin, principal of the Wigan Technical College, explained the aims of the association and the benefits of membership. In the course of the proceedings it was stated that an attempt was made more than twenty years ago to establish an association of this kind, but it proved unsuccessful. But much water has flowed under the bridge since then, and the motion to establish a West of Scotland branch was carried by acclamation. Mr. A. M. Galbraith, Glasgow Technical College, was appointed secretary.

Last year, after a prolonged agitation, the Scottish universities obtained relief from the Ordinance which made them interdependent on one another, so that no single university could bring about the simplest reform without the consent of all the others. The demand for reform has centred on two main points, an extension of the university terms and a restraint from "the debauch of options" that mark the present M.A. degree course. The new regulations that are being considered at the various university centres all concede the first point and extend the session by about ten weeks. But in regard to the second point a serious position has arisen in Edinburgh. All outside the charmed circle of Edinburgh University Senatus understood that the old seven-subject degree was to be replaced by a five-subject degree, with intensive study over two years in two of these subjects. When the new regulations were submitted last month to the General Council of Edinburgh University, it was found that the old seven-subject degree was still to be retained. This was defended on the ground that it would represent a general culture rather than a specialist degree. Prof. Chrystal stood forth as the champion of this policy. Hitherto he has been regarded as the leader of the reform party, but the reactionaries have proved too strong for him, and he has apparently gone over to their side. Principal Laurie, Heriot Watt College, was right when he said that Prof. Chrystal's scheme was one of the most deplorable things that ever happened in the University, and apparently the first use the University was to make of its new freedom was to cut down the standard of its own degree. The reform party had neglected to bring up its forces and the reactionaries triumphed all along the line; but in the long run it may turn out a Pyrrhic victory for them. The end is not yet.

In Aberdeen University regulations seemingly framed on the Edinburgh model were also submitted to the General Council. There, however, they met with short shrift from the members. It was resolved that every curriculum should include at least one double course in a certain subject. The number of options was also materially reduced by insisting that every student should take one subject in each of the departments of languages, philosophy, and science. The proposal of the Senatus to regard attendance at two out of the three terms as sufficient for graduation was also rejected, as instead of an extended session this would really mean a shorter session than the present one. Glasgow and St. Andrews have yet to settle their policy, but it is believed that they will refuse to follow the fatuous lead of Edinburgh.

In the third issue of the *Secondary School Journal* Sir James Donaldson, the principal of St. Andrews University, has an interesting article on "The Scottish Universities and the New Ordinances." He points out that the larger universities—Glasgow, Edinburgh, and Aberdeen—have adopted the three-term session, chiefly in the belief that the arrangement will lessen the difficulty of dealing with large numbers of teachers. The principal, however, does not see how this change is going to remedy the evil, and he rightly points out that what is required is a much larger supply of teachers. St. Andrews has not yet adopted the three-term session. It prefers to profit from the result of the experiments of the other universities in this direction.

A meeting of school-board managers, teachers, and employers was held in Edinburgh on February 12th for the purpose of considering the new Education Act in relation to continuation classes. Mr. W. H. Mill, the chairman of the Edinburgh School Board, said that it would be necessary to go very cautiously in the adoption of bye-laws for compulsory attendance. They must first convert the employer and the ratepayer, as well as provide the right kind of teacher, before any system of compulsion could be set up. Councillor Leishman challenged anyone to say that a child of fourteen was quite able to take up its life-work. He was a whole-hearted advocate of compulsion up to seventeen years of age and would fight the coming school-board election on that issue.

Prof. Darroch, in speaking to the Glasgow branch of the Educational Institute on the subject of "Moral Education," said that the moral problem is the heart of the education question of to-day. However successful the educational system of a country may be in realising the intellectual and economic aims of education, yet it fails entirely in its main purpose if it does not make a deep and lasting impression upon the young manhood of the nation. Practically all interested in education are agreed that moral instruction is necessary in some form or other, but there are two distinct schools of opinion as to the best method of imparting it. The advocates of direct moral instruction wish a definite place assigned to the subject in the curriculum and on the time-table. On the other hand, there are those who contend that the formative influences are strongest and best when they are indirect, that it is through living in and taking part in the organised life of the home and the school that moral character is formed, and that virtue is not a thing to be learned through precept, but to be acquired through practice. Prof. Darroch, while not despising the aid of direct moral instruction, holds that one must depend on the sure but silent forces of good example and consistent well-living to build up a healthy and virtuous manhood.

IRISH.

At the time of writing, the names of the intermediate-school inspectors have not been made known. It was stated that they would be announced early in the year, but the Intermediate Board has discovered some unexpected difficulties, and it is stated that a new Act of Parliament will be necessary before it can carry out its wishes with regard to the substitution of inspection for examination as the basis of payment. It is not likely that such a Bill would be unopposed if, as is now agreed, the cost of inspection is to be deducted from the school grant. The wheels of secondary education could be greased if the

Government would consent to pay for inspection without interfering with the school grant, or even to increase the latter; but of this there seems little likelihood. Irish intermediate education must expect to muddle along somehow. Certainly the Intermediate Board might study the Department's methods of inspection or those of the Board of Education in England. It would then realise that a good deal of spade-work is necessary before the structure of inspection can be reared successfully. A whole theory of inspection with a complete reorganisation of the Intermediate Office is required.

THE Intermediate Board has taken one sound step, so far as it goes. It consented to appoint a small committee to confer with the joint committee representing the heads of Irish secondary schools, and this meeting took place on February 5th. The committee naturally had no complete theory of inspection to submit, but was rather bent on defending and saving the schools from arbitrary decisions of inspectors. It proposed to suggest means for preventing inspectors from giving different reports and for providing a court of appeal from inspectors, and to utter a warning that, after all, the written examination is the thing, not inspection. In fact, the committee of heads of schools does not seem to welcome inspection, but to attempt to disarm it. There is everywhere an uneasy feeling of want of confidence due, beyond all doubt, to a belief that the Intermediate Board has not grasped the situation. Certainly, if it comes to that, much sympathy would be felt with inspectors whose duty would be to apportion a very limited grant among a large number of needy schools.

ONE of the most memorable declarations of the month was the statement of the Episcopal Standing Committee of the Roman Catholic hierarchy on the question of compulsory Irish in the new National University. While expressing sympathy with the progress of the Irish language, the bishops believe that it is quite possible that compulsion, instead of being a help, would be a hindrance to the language movement. It would certainly drive away some students from the new University; and they point to the progress already made in Catholic seminaries and intermediate schools under the present purely voluntary system. The best means to promote the movement is, they say, to set up bright centres of Gaelic study that will, by their type and by their rewards, attract young Irishmen within the sphere of their Irish influence. This declaration probably settles the question of compulsory Irish, but it has not been popular.

THE Classical Association of Ireland held its second annual public meeting on February 4th in the Royal Dublin Society's Theatre, Prof. Dill presiding in the unavoidable absence of Mr. S. H. Butcher, M.P. The president for 1909, the Right Hon. Mr. Justice Madden, delivered his inaugural address, on "The Influence of Classical Learning on Elizabethan Literature." The Elizabethan period is one on which he is a recognised authority, as shown by his Shakespearian work "The Diary of Master William Silence." His object was to show that all modern English literature is due to the influence of the Renaissance upon England, to direct attention to the wonderful vitality of Greek literature as shown in this influence, and to suggest that its power was still unexhausted and inexhaustible. The meeting was also addressed by Dr. Tyrrell, Father Finlay, Dr. L. C. Purser, and Mr. C. F. Doyle, K.C. The association's report states that advisory committees have been appointed both in Dublin and Belfast to suggest means for the improvement of classical teaching and other ways of promoting classics, and that steps are being taken to establish co-operation between the association and the various college classical societies. The annual meeting next year will be held in Belfast, when Prof. Dill will be president.

AT the annual meeting in Dublin of the Institute of Bankers in Ireland in January a lecture was delivered by Prof. Bowley, of the School of Economics, London, on education and business. As a training for business he recommended that a boy should stay at school until he is seventeen, then for two years should spend his time in an office, workshop, or factory, and then enter a university. For those who cannot afford to wait so long he strongly urged two years at a technical institute or college after leaving school at the age of fifteen or sixteen. Mr. Stirling, manager of the York Street Flax Spinning and Weaving Co., Belfast, stated that the Belfast Chamber of Commerce suggested to the Intermediate Board eighteen months ago some necessary alterations in the modern literary course in order to make it more useful for boys about to enter business life, not proposing any new subjects, but putting forward some amendments in existing subjects, such as English history, geography, modern languages, English composition, experimental science, arithmetic, elementary mathematics, and book-keeping; but the reply of the Board has been discouraging.

THE second part of vol. ix. of the *Journal* of the Department of Agriculture and Technical Instruction was published in January, price 6*d*., and contains more than 200 pages. Most of the book is devoted to agriculture. The vice-president's address is given in full; and the chief articles deal with tobacco growing, protection of woodlands, early potato growing, and flax and field experiments.

WELSH.

THE clerk to the Carmarthen Borough Education Committee has submitted the report he was asked to make with regard to the teaching of Welsh at Carmarthen. It appears that at all the elementary schools Welsh is taught for periods varying from one to two hours and a half a week. In some of the schools all the members of the staff can teach Welsh, in one girls' school only one mistress out of five on the staff. At St. Mary's Catholic School, it was reported, with an average attendance of 52·2, a French teacher teaches the Welsh for one hour and a half a week to thirteen of the children, and buys the books at her own expense. At the committee meeting it was suggested that a large number of the boys thirteen or fourteen years of age might be educated better than some of the teachers, because they attended Sunday schools.

IT has been decided by the Monmouthshire Education Committee that hygiene, as well as nursing, proper methods of feeding children, and fire drill be taught in the elementary schools of the county—*i.e.*, presumably, in the girls' schools. It is proposed to make Christchurch Council School the demonstration school in the new training college to be established at Caerleon. The headmaster of this school will be connected with the staff of the training college, and a specialist in infants' methods has been appointed as an assistant.

SIR HARRY REICHEL has printed a paper, read before the Church Congress, on the "Supply and Training of Ordinands in Wales," in which he pleads strongly that the resources of Lampeter are unequal to the task of providing a complete training, "secular and theological," for its students. "Lampeter," he says, "is in an educational backwater; the main current in Wales sweeps on

into the University Colleges, and Welsh educational organisation makes this inevitable." The remedy proposed is: "Leave the secular work to the State-supported University Colleges, and elevate Lampeter to the only position worthy of her—the only position anyone would dream of assigning to her, if she were now being for the first time called into existence—that of the post-graduate school of theology of the Welsh Church." Sir Harry Reichel therefore urges the four Welsh bishops to unite and insist on a thorough course of post-graduate theological study as a necessary condition of ordination.

Through the death of Mr. W. R. M. Wynne, Lord-Lieutenant of Merionethshire, the valuable Peniarth collection of Welsh MSS. will become the property of the new National Welsh Library, and be transferred to Aberystwyth. William Wynne, of Peniarth (1774–1834), was a great collector of MSS. and a famous antiquary. His son, the late Mr. Wynne's father, inherited the collection, and in addition came into possession, by legacy, of the Hengwrt collection of Welsh MSS. formed originally by Robert Vaughan in the seventeenth century. In 1869–71 Mr. William Wynne published a catalogue of these valuable documents in the "Archaeologia Cambrensis," and also, in later years, collected material for a history of Merioneth, and left this in MS. form at Peniarth.

One point is worth noting in connection with the prize distribution which has lately taken place at Towyn County School. The school was opened last year by Mr. W. Runciman, Minister of Education, and is a thoroughly well-adapted and well-equipped building for a successful school. The balance of money required for the building has been advanced as a loan by Mr. David Davies, M.P., who was present at the prize-giving. Mr. Davies said the interest of 3 per cent. which he was to receive would go towards founding the colonial history lectureship at the University College of Wales, Aberystwyth. The object of the lectureship on colonial history is to "impress upon students the fact that history is a vital matter from which lessons may be learned in what has made the great empires of the past decay and die, and how to avoid the defects which have disintegrated them and caused them to die."

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RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Commercial and Technical Terms in the English and Spanish Languages. By R. D. Monteverde. 119 pp. (Whittaker.) 2*s.* net.—This little book is a dictionary of idiomatic phrases of a distinctly commercial type. The care to be exercised in the translation of such words as *delivery*, *fall*, *keep*, *leave*, *make*, *meet*, &c., becomes immediately apparent to the student who reads the parallel sections devoted to these words. With such guides, an Englishman but slightly conversant with Spanish could probably, without much difficulty, carry on a business correspondence in that language. The book may therefore prove useful. It is, however, of little value in the class-room. The very definite Academy rules governing the use of the accent are disregarded, and the spelling throughout the book is full of such inconsistencies as the following: *Sirvase*, p. 3, *Sírvase*, p. 31; *algun*, p. 3, *algún*, p. 77; *Londres*, p. 3, *Lóndres*, p. 13; *mas* (adv.), p. 5, *más* (adv.), p. 5; *orden*, p. 37, *órden*, p. 13; *introduccion*, p. 59, *introducción*, p. 59; *libertad*, p. 37, *libertád*, p. 37; *pagar*, p. 51, *pagár*, p. 51. Misprints easily creep into foreign texts, but only careless proof-reading can account for ten errors on a single page.

A First Spanish Book. By H. J. Chaytor. 214 pp. (Arnold.) 2*s.* 6*d.*—We know no Spanish grammar better adapted to the needs of one beginning the study of Spanish without the help of a teacher. The grammatical explanations are clear, the examples well chosen, and the exercises for translation valuable, because they greatly depend for their vocabulary on the text of the Spanish extract immediately preceding, and contain words belonging distinctly to the same group. The Spanish letters of the commercial section are of a useful type, but seem in no particular way connected with the English letters included in the same section. We fail to see the use of the latter. If intended for translation into Spanish they should, we think, have been supplied with helpful notes. The poetical selections and the prose extracts form a suitable appendix. We have noted one or two misprints only.

Lo Positivo, por Tamayo y Baus. Edited, with Introduction, Notes, and Vocabulary, by Philip Harry and Alfonso de Salvio. 124 pp. (Heath.) 1*s.* 6*d.*—The value of a Spanish play as a class reader cannot be overestimated. The rapid conversations, alive with picturesque expressions and bristling with exclamations as eloquent as gestures, enable one to understand the peculiar qualities of a language that does not need elaborate sentences to convey the most delicate shades of meaning. This edition has been carefully and skilfully prepared; notes are given where needed, and the vocabulary is sufficient. In regard to such notes, would it not be possible to give in Spanish the explanations of the difficult passages? Notes of the type of 60, 2, *¿Esas tenemos?* is equivalent to *¿Es verdad?* or, better still, 41, 8, *Váyase una cosa por otra, i.e., es la misma cosa*, could with advantage be more numerous; could, in fact, be used exclusively, and the student would derive greater benefit from them: he would be spared the annoyance and the loss of time involved in a change of tool, and would also acquire greater dexterity in the use of the one in hand.

Classics.

A Short History of Greece, to the Death of Alexander the Great. By W. S. Hett. viii+316 pp. (Methuen.) 3*s.* 6*d.*—This book is meant to suit those preparing for the Higher Certificate and similar examinations. We know of no short history so good as Oman's, but it is true that our ideas of prehistoric Greece have been revolutionised by the discoveries in Crete and elsewhere: here Mr. Hett has the advantage of coming later, while he has the disadvantage of being tempted, as all writers are, by the "latest view" (p. 15). His judgment also comes in question, if he can suppose that the epithet "god-like," as applied to Eumaeus, had any definite sense (p. 24): like many others, it was part of the tradition, used because it was the proper thing. The narrative is set forth in an agreeable and flowing style, and the book seems to be well adapted to its purpose. Of course, without trial, we cannot say that nothing essential has been omitted; but, so far as we have been able to test it, we like the book.

The Attica of Pausanias. Edited by M. Carroll. College Series of Greek Authors. viii+294 pp. (Ginn.) 7*s.* 6*d.*—This is a very useful book for those who are beginning to study archæology. It will not be generally useful for schools, but might be read unprepared by a good sixth form, and could not fail to do them good. The notes are mostly explanatory of the matter; a few concern the

author's language. The appendix contains a good list of books on the chief topics of the "Attica," with a discussion of the harbours, the Agora, the Enneacronnos, and several other disputed sites. Mr. Carroll follows Dörpfeld for the most part, if not with so fervid an admiration as Miss Harrison does. He does not believe in the third Long Wall, nor is he of Gardner's opinion in the matter of the harbours. This is not the place to discuss these difficult points; we have only to direct attention to the author's attitude.

The Euthyphro of Plato. By St. G. Stock. Text not paged + xx + 20 pp. (Clarendon Press.) 2s. 6d.—The text of this book is that of the Oxford Bibliotheca. Its introduction and notes, short and unpretending, are meant for the candidate for Responsions. Mr. Stock's competence no one will question: the philosophical introduction is good; the notes are instructive, and not otiose. Quotations are generally given in full: a good practice. It cannot be said that all are necessary for understanding the text; but all are worth reading.

Elementary Greek Exercises: an Introduction to North and Hillard's Greek Prose. By the Rev. A. E. Hillard and C. G. Botting. viii + 156 pp. (Rivingtons.) 2s. 6d.—The vocabulary of this book is brief and simple, and its syntax that of the simple sentence. References are added to Abbott and Mansfield and to Rutherford: syntax rules are stated as required. The print is spaced out like a short story extended to six-shilling form: thus on p. 3 are sixteen sentences, counting in all sixty-seven words. The sentences are absolutely barren of interest and of connection: "he loosens his spear—in the country of the muse—the wisdom of the goddess—in the seas." The later exercises are longer, but have no more sense. One Greek exercise is added for every three English. If the pupil survives the ordeal of nonsense, he will have had a great deal of practice in simple words and constructions.

Latin Prose Composition: comprising (i) *Notes on Grammar, Style, and Idiom;* (ii) *English Passages for Translation into Latin.* By W. R. Hardie. xii + 350 pp. (Arnold.) 4s. 6d. net.—This is a really admirable book. We have read all the first part with interest, and learnt a great deal; not least welcome was a sensible definition of the difference between *habeo* and *est mihi*, which we could feel but not put into words. Not only are the notes on grammar and idiom clear and useful, but the author has such excellent common sense. "To say something different from what you meant to say, merely because what you did mean to say would be grammatically awkward, is bad writing." How true! and how few say it! Better still is this: "'The impossibility of completing this project caused him to form a new design' is a type of sentence which should not be written in any language." Much of the dog-Latin now written is due to the detestable bad English now written and believed to be good. The grammar notes are not systematic, but they deal with matters where mistakes are common. Besides these there are notes on metaphor, rhythm, and resources of expression—modern ideas in Latin form. There are 315 prose extracts, a few with notes.

English.

A NEW series of well-known books (6d. each) is sent by Messrs. Blackie. *The Christmas Carol, Robinson Crusoe, Tales from the Arabian Nights, The Chimes, Gulliver's Travels, The Cricket on the Hearth, Rip Van Winkle,* and Charles Lamb's *Ulysses* are among them; they are in cloth and make excellent cheap prize books. The same publishers continue their English texts (8d. each): Hakluyt's *Spanish Armada* and *Plantations of the French in Canada* are now printed; Horace Walpole's *Letters* form good contemporary history. Addison is represented by the *Coverley Papers*, edited by Mr. Myers for the Clarendon Press, 2s.; and by fifty *Spectator* essays, edited by Mr. Morrison for Messrs. Macmillan, in their well-known series, 2s. 6d. Both books have excellent introductions and sufficient notes. It is a little strange that no publisher should have thought of reproducing a *Spectator* sheet as it came to the breakfast-table; few, even of literary people, could tell what it was like. Some attempt is made in these books to say a good work for poor, over-shadowed Dicky Steele.

THE Clarendon Press continues Mr. Quiller-Couch's valuable little Select English Classics. Wordsworth, Browning, Tennyson's *Early Lyrics* (extremely good), and even Walt Whitman are now in this threepenny series. We wonder how many schoolmasters could repeat a dozen lines of "There was a child went forth." Even that much-talked-of and badly acted play, *Everyman*, may now, with introduction, be got for threepence. An annotated copy of *Adonais* (Blackie), Fitchett's *Great Deeds on Land and Sea*, and *Rab and His Friends* (Black), the *Lays of Ancient Rome*, and *Sesame and Lilies* (Heinemann), are all absurdly cheap. A dramatised version of *Hiawatha* (Harrap), by Miss Holbrook (1s.), is a most welcome addition to the much too scanty stage-literature for children. Most people do not realise that children can act and read and use appropriate gestures—until the school gets hold of them. Two beautiful books from Messrs. Chatto and Windus end our list—*The Taming of a Shrew*, a reprint of the pre-Shakespearian play (2s. 6d.), and Asser's *Life of Alfred* (1s. 6d.). They are issued in the King's Classics, and are edited by Prof. Boas and Mr. L. C. Jane respectively; they are a joy to all the sons of Richard de Bury.

AMONG other reading books recently received are *Fairy Tales*, compiled and edited by Marion F. Lansing (Ginn, 1s. 6d.); the *Ruskin Nature Reader*, which is a collection of literary extracts to accompany a course of nature-study, selected and edited by G. R. Bennett (Dent, 1s. 9d.); *Stories from Don Quixote*, retold by H. L. Havell (Harrap, 1s. 6d.); Fenimore Cooper's *Pathfinder* (Chambers's Standard Authors); *Through the Looking Glass and what Alice found there* (Macmillan, 1s. net); and numerous additions to Chambers's Narrative Readers and to the Bright Story Readers, edited by Alfonzo Gardiner for Messrs. E. J. Arnold and Son, Ltd., of Leeds.

A School History of English Literature. Vol. iii. Pope to Burns. By Elizabeth Lee. 230 pp. (Blackie.) 2s.—Those who are familiar with Miss Lee's contributions to the teaching of English literature in schools will be glad that she has undertaken a school history of it. This third volume is excellent. Its special value lies in the fact that, with much discriminate criticism of individual writers, the general development of literary movements stands out in clear relief. The illustrations are always interesting, and have an essential relationship to the author himself and to his place in the literary history of his period and his country. Of course, even so clear and trustworthy a guide as this author will be of little value unless read in conjunction with the works of the writers themselves, but in the hands of an intelligent teacher we know of no manual more likely to stimulate literary appreciation. Miss Lee does not profess to be an economist; but were Goldsmith's ideas on the connection between rural depopulation and the concentration of wealth—as set forth with such power in "The Traveller"—so "economically unsound" as she seems to think?

History.

The British Empire: its Past, its Present, and its Future. Edited by A. F. Pollard. xxxii+864 pp. (The League of the Empire.) 5*s.* net.—A volume to which fifteen experts have contributed, besides the editor, is beyond the criticism of the lonely scholar, and we therefore content ourselves with indicating the scope of the work. With division into "books," parts, and chapters, it contains an account, first, of the British Isles, their physical features, their history, and the present form of their government (242 pp.); then of the self-governing States, Canada and Newfoundland, Australia, New Zealand, and South Africa (306 pp.); then of the Empire of India, the East and West Indies, East and West Africa, Egypt, and the "Sea Links of the Empire" (216 pp.), ending with a chapter on the future organisation of the Empire and an appendix on the chronology, and an index. The moral of the book is in the chapter on future organisation. There will be found an account of the colonial and imperial conferences and discussions as to the meaning of all this. It should form an admirable text-book for the younger citizens of our world-wide Empire, with all its problems and possibilities.

Documentary Source Book of American History, 1606–1898. Edited by W. Macdonald. xii+616 pp. (New York: The Macmillan Co.) 7*s.* 6*d.* net.—This volume contains 187 documents illustrative of the history of the United States of America, selected from three volumes of similar collections previously published by the author. There are brief introductions to each document and an index. We can well understand that such a volume would be useful to the teachers of higher classes in schools and of the universities of the United States, and it certainly serves as a good manual for teachers on this side the Atlantic who want a convenient volume containing the most important of the colonial charters, legal arguments on slavery, the text of the Constitution of the United States and the legal questions which have arisen in its interpretation, as well as some of the more important international treaties which the western republic has made.

The Oxford Student's History of India. By V. A. Smith. 254 pp. (Clarendon Press.) 2*s.* 6*d.*—"This little book is designed primarily to meet the wants of students preparing for the matriculation examination of the Calcutta University," who will probably be more familiar with the names with which this manual quite necessarily abounds. It is an excellent little book, giving in small compass a sketch of Indian history from the earliest times to the present day, the British period occupying nearly the last third of the space. There are ten illustrations, views or portraits; but the most striking feature of the book is the seven maps, which give in clearly marked outline the divisions of the country at six different periods, as well as the physical features. One appendix consists of the Queen's Proclamation in 1858, and another of the syllabus to which the book is written.

Geography.

Lands beyond the Channel. By H. J. Mackinder. xii+276 pp.; illustrations and maps. (Philip.) 1*s.* 9*d.*—This is the second of the four books which Mr. Mackinder has promised expectant school geographers. The first, "Our Own Islands," appeared at the end of 1906; the two to come are "Distant Lands" and "The British Empire." Each is designed to succeed the preceding volume, and each is therefore graduated in the matter of difficulty so as to suit the growing capacities of a boy who meets with vol. i. in, say, the middle of a preparatory or elementary school. The present book is really excellent work. Interesting, readable, and of an easy, taking style, it makes a delightful "reader." Appropriately enough, it begins with France, and treats the country at greater length than any of the others; for France is our nearest neighbour, both geographically and historically. And Mr. Mackinder makes much of history throughout his book. He believes in the inversion of the usual order (geography before history), and considers that history should be taught *in order to explain* the facts of geography. Accordingly, whether he writes of the ancient Greek or modern French, of the captive Hebrew or marauding Moor, history is always to the front and always by way of an exposition of geography. A teacher who uses "Lands beyond the Channel," and supplements it with exercises (there are none in the book), should turn out good work and good results.

Practical Geography. Part I. By J. F. Unstead. 120 pp.; maps and diagrams. (Clarendon Press.) 1*s.* 6*d.*—A good geography teacher nowadays teaches by means of question and answer. He avoids telling facts *qua* facts so far as possible (he cannot help himself sometimes, of course), but he leads his pupils through suggestive questions to discover the facts for themselves. This book of Mr. Unstead's, published as one of the Oxford Geographies edited by Dr. A. J. Herbertson, will help such a teacher who is occasionally hard-pressed to evolve the desired questions, say, for homework. It contains more than 400 exercises, all designed not so much to teach as to elicit observation and thought. The exercises do not err on the side of difficulty, a common fault in books of this type; they comprise suggestions, or rather instructions, as well as the typical questions beloved by the normal examiner. Here are four widely different examples, which will indicate the general scheme and allow teachers to judge of its value: "*Ex.* 270.—Measure the area of the uplands of Scotland (relief map of Scotland given). *Ex.* 361.—Construct a diagram showing the amount and nature of the export trade (U.K.), using (a given) scale and colouring (table of exports and their values for 1906 given). *Ex.* 160.—Are the hills in your district formed of different rocks from those of the lowlands? Give particulars. *Ex.* 96.—Do you think the village of Mickleham (Ordnance Survey map of 1 in. to 1 mile given) is likely to grow into a town? Give your reasons." The book is divided into four sections: (i) maps; (ii) home district; (iii) weather; (iv) British Isles. It has a small but distinctly useful index.

Mathematics.

Differential and Integral Calculus. By Daniel A. Murray. xviii+491 pp. (Longmans.) 7*s.* 6*d.*—This work provides a first course in calculus, with applications of a geometrical, kinematical, and dynamical kind. The range covered is fairly extensive, including the usual processes of differentiation and integration, besides a chapter on differential equations. Very great pains have evidently been taken to present each topic as simply and clearly as the nature of the case permits, and the text is well supplied with illustrative examples, while many exercises are provided for the practice of the student. A feature of the book consists in the numerous references to other text-books where the student may find particular topics discussed either more fully or from a different point of view; notes of a historical character are frequently given, and they should prove of interest to the student. An appendix contains notes on certain matters that could only be treated briefly in the text, a good table of integrals, and a number of figures of some of the more important curves.

An Introduction to Projective Geometry. By L. N. G. Filon. viii+249 pp. (Arnold.) 7*s.* 6*d.*—It is often said that the abolition of Euclid's "Elements" as a standard text-book has gone far to destroy interest in pure geometry; yet the appearance within quite recent times of several books dealing with what used to be called "sequel to Euclid" is hardly consistent with such a statement. There is, in any case, no doubt in our mind as to the future of geometry; when the experimental methods have been fully developed there will, we believe, be a much wider and deeper interest in pure geometry than ever there was in the old days, and we welcome this book on projective geometry, apart altogether from its own merits, as an indication of the interest that geometry possesses. But the merits of the book are such that we welcome it also on its own account. The range is wider than that of most similar works in English in that two chapters dealing with the geometry of space are included; these two chapters, though brief, will be found very valuable. The book gives a good introduction to projective geometry; the text and exercises, taken together, give a good selection of material, and the exposition is usually clear, though concise.

Elementary Algebra. By C. H. French and G. Osborn. xii+506 pp. (Cambridge University Press.) 4*s.* 6*d.*—Though we do not think that the exposition of the theory of algebraic operations given in this work is specially good or suggestive, yet the statement and illustration of the working rules of the subject are marked by great clearness and give all that is needful to enable the average pupil to get a good working knowledge of the ordinary processes of algebra. The common blunders of the beginner are often specially noted, and every effort seems to have been made to smooth the pupil's path. Numerous examples are worked out in the text, and very many more are provided for practice; perhaps more might have been given of a geometrical character. The book includes chapters on logarithms and on the binomial theorem for positive integral exponents, so that the range is sufficient for many examinations.

The Eton Algebra. Part I. By P. Scoones and L. Todd. xxvi+184 pp. (Macmillan.) 2*s.* 6*d.*—This book is rather a collection of examples than a text-book of algebra, as it consists simply of examples (with answers) and a few specimens of worked-out exercises. The examples range from substitution to easy quadratic equations, and include a large number for graphical treatment; they provide ample practice for beginners. Would it not be wise to vary the monotony of the stock "Answers" by some such phrase as "the required product is so-and-so" or "the root of the equation is -5"?

Science and Technology.

Practical Physics. By Lionel M. Jones. viii+330 pp. (Longmans.) 3*s.*—Mr. Jones has confined his attention to practical work in heat, light, magnetism, and electricity; and before beginning the experiments in this book the student is expected, presumably, to have worked through a practical course of preliminary physical measurements. In addition to careful instructions as to how precisely to proceed to perform the experiments included in the book, Mr. Jones has provided the student with much descriptive comment as to the significance of the results to be expected and the connection subsisting between the various demonstrations. It may be said at once that the course is well arranged, and that the book provides abundant evidence of the author's skill and experience as a teacher. We are a little doubtful as to the wisdom of making the instructions for individual experiments so long—some run to two pages of close print; our experience suggests that the shorter and more peremptory the guidance given is, the more quickly does a student get to work. More use might have been made of graphical methods in the heat section, and many of the illustrations might with advantage have been less sketchy. But we like the book, and we commend it to the attention of teachers of practical physics with complete confidence.

Laboratory Arts. By Dr. G. H. Woollatt. xvi+192 pp. (Longmans.) 3*s.* 6*d.* net.—Ten years ago a volume by Prof. Threlfall was published under the same title as that of the present work, and of much the same nature. Prof. Threlfall's book is, however, now out of print; so that teachers and students who desire to become efficient workers in wood, metal, or glass, in order to construct, adjust, or repair simple scientific instruments, will welcome a new practical manual designed to assist them. The instructions given are clear, and, so far as our experience goes, sufficient to enable any careful worker to become an adept in laboratory arts. In addition to the work with metal, wood, and glass, many useful descriptions are given of such subjects as silvering glass, electrotyping, cements, graduation of instruments, and other matters upon which information is required frequently in connection with lecture and laboratory apparatus. Every practical science teacher has found by experience the methods and operations by which he can obtain the most satisfactory results. Dr. Woollatt gives others the benefit of his experience, and though his methods may not be the best always, they are evidently based upon actual working knowledge. His book should be in the library of every laboratory, and many of the exercises in it may be done in the school workshop to the advantage both of the pupil and the teacher.

The Principles of Physics. By A. P. Gage. Revised by A. W. Goodspeed. 547 pp. (Ginn.) 6*s.* 6*d.*—This is a revision of the edition of 1895. Space for the insertion of matters based upon recent developments of physical science has been obtained by the omission of sections, upon more remote applications of principles, which appeared in the previous edition. The book is intended to be used in connection with class-room instruction, and it is written in a clear and attractive manner. As directions for carrying out experiments are not systematically given, it is not sufficient for the purposes of a laboratory guide. We notice occasional statements which should have been rectified by a careful revision: thus Ohm's law is not defined correctly by the expression that "the current is equal to the electro-motive force divided by the resistance"; and on p. 34 reference is made to "an acceleration of one foot per second." The general treatment of *acceleration* (p. 7) is inaccurate in the same sense.

Continuous Current Engineering, An Introductory Course of. By Dr. A. Hay. 327 pp. (Constable.) 5*s.* net.—Although introductory, this volume is not intended for absolute beginners, and an elementary knowledge of magnetism and electricity is assumed on the part of the reader. After a short chapter on electric units, subsequent sections are devoted to magnetic tests, measuring instruments, the dynamo, secondary cells, the electric arc, radiation and photometry, switches, and conductors. These subjects are treated without exception in a scientific and lucid manner, and the student of electric engineering may rely upon it safely for exact and up-to-date information.

Pedagogy.

Educational Issues in the Kindergarten. By Susan E. Blow. International Education Series. xxxiv+386 pp. (Appleton.) 6*s.* net.—This, the fifty-eighth volume, quite maintains the high standard of excellence for which this series is remarkable. It is an endeavour to trace the effects of certain phases of modern thought, to wit, the scientific doctrine of relativity as the controlling principle of the universe, the working hypothesis of physiological psychology that "mental action may be uniformly and absolutely a function of brain action," and the undue ascendency of industrial aims over the mind of the American people, upon the Kindergarten, and thus to point out the disasters they are likely to cause in all provinces of education. The arrangement of the book is simple, and Miss Blow may be congratulated on the clear way in which she has marshalled her arguments, reminding us very strongly of another famous work, the "Principles of Science." Each of the above-mentioned modes of thought is presented concretely in the typical example of a kindergarten programme (the first won a prize of £10); then each programme is discussed with the purpose of throwing its creative principle into clear relief; and finally some hints are thrown out of the influence of this principle in other spheres of life and thought. All this, as Prof. James says, is "the theoretic side." The book has a practical side also, which makes it specially valuable to kindergarteners. It endeavours to set forth very clearly the theories of Froebel with regard to the education of little children, and it points out that his four principles are reciprocal and interdependent, and that teachers, by rejecting any one of these in favour of developing the others, violate the principles which underlie the theory of their art.

Some Characteristics and Requirements of Childhood. By Alice Ravenhill. 71 pp. (Leeds: E. J. Arnold.) 9*d.* net.—This slim volume is based on a series of articles (revised and to a large extent rewritten) originally contributed by Miss Ravenhill to the *Guardian*; and she has added two new chapters on Play and Adolescence. Their publication in a collected form will doubtless be welcomed by the larger public to which they are now available, for they treat, with philosophic insight, of a subject which should be of the greatest interest to all parents especially, and in a manner which would invest it with interest even in the case of those to whose sympathies it may appeal less directly. This brief but far from superficial survey of the most important, because the most plastic, period of human life—so weighted with infirmities and so full of potentialities for good and ill—is equally clear and informing. The appendix of a short bibliography will afford further help to those who may be stimulated to investigate more deeply some of the many aspects presented by the subject.

Art.

Nature and Ornament: I. "Nature the Raw Material of Design." By Lewis F. Day. 121 pp.; illustrated. (Batsford.) 5*s.* net.—This is the first of two new volumes intended to supersede Mr. Day's "Nature in Ornament," which was published close upon twenty years ago. The special purpose of the present volume is to illustrate the decorative and ornamental character of natural growth and its suggestiveness as the starting-point in design. Mr. Day is an eminent authority on this subject, and discourses in most illuminating fashion on the development of ornament from natural forms and its constant relation to nature. He has been happy in his collaboration with Miss Foord, whose delightful illustrations, though characterised as merely plain and definite statements of fact, are done with botanical precision by an artist who has a keen appreciation of the beauties of line and of the possibilities of black and white; they would be equally valuable either as studies for design or as material for botanical or nature-study lessons; in fact, if the book had been issued solely as a work on nature-study it would have been deserving of a high place among publications dealing with that subject. This is a book which no one interested in plant form, either in its natural or ornamental aspect, can afford to do without.

The Transactions of the Third International Art Congress for the Development of Drawing and Art Teaching, London, 1908. 593 pp. (The Offices of the Congress, 151, Cannon Street, E.C.) 6*s.*—The publication of these voluminous transactions marks the closing stages in the work of the congress which was held at Kensington in August last. The report, which covers nearly 600 pages, contains by way of introduction an interesting account of the growth and organisation of the conference, followed by a list of the 1,819 members and delegates, representing thirty-eight countries. The proceedings of the congress in general meeting occupy some 400 pages; the papers read and the addresses given are reported *in extenso*, together with the subsequent resolutions and discussions, which were frequently by no means the least interesting part of the proceedings. The rest of the volume is devoted to the reports of the sectional meetings and to the lectures on special subjects which were given during the congress week. There are four appendices and an extremely copious index. This report, representing as it does the present state of art teaching in every phase and in almost every country, forms, together with the "Illustrated Handbook" to the congress, an invaluable record of the proceedings of this important conference, and as such should be in the hands of all educationists in general and of secondary-school masters in particular.

A Theory of Pure Design. By Denman W. Ross. 194 pp. (New York: Houghton and Mifflin; London: Constable.) 10*s.* 6*d.* net.—This book is an attempt to elucidate the principles which underlie the practice of drawing and painting as a fine art, and to define, classify, and explain the phenomena of design. In his endeavour to bring the principles of art to terms of exact definition and measurement, the author moves along most remarkable and original lines of thought, and presents an entirely new association of ideas on the subject, which are calculated, however, to appeal more strongly to the man of science or to the mathematician than to the artist.

Miscellaneous.

Official Report of the Federal Conference on Education, 1907. 384 pp. (The League of the Empire, Caxton Hall, Westminster.)

Annual General Report of the League of the Empire. 1906–7. 83 pp.

Both of these publications are a little belated in appearing. They are chiefly concerned with the Federal Conference, which in these days of frequent educational meetings is regarded in some quarters as ancient history. But the reports well deserve a place in the reference library of educational workers; the first especially, containing as it does expressions of educational opinion from all parts of the Empire, will often be consulted.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in* THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.

English Authors in Junior Forms.

A METHOD of dealing with English prose authors, as practised by the writer during the past six years, may be of interest to the readers of THE SCHOOL WORLD. It consists, briefly, of the teacher's framing of short remarks based upon the text, and the pupils' searching for, and recording in their note-books, the reference to the passages to which these remarks are apposite. As will be seen from the subjoined examples, these exercises may involve references to text-books of history, geography, grammar; dictionaries; the Bible; parts of the text previously studied; they may be arithmetical; they may, and I think frequently should, appeal to the pupil's imagination and sense of humour.

The present examples are all culled from a series dealing with that delightful classic, "Robinson Crusoe." Commencing, as is perhaps excusable in a biography, with the date of Robinson's birth, an opportunity is at once afforded the student of an exercise in simple subtraction (*a*). Unless, however, his mathematical faculties are not on a par with those of the late Dean Stanley, the calculations need not always be of so elementary a nature; still, a nodding acquaintance with dry measure and the process of reduction will expedite the youth's search for 5120 gills (*b*) as an alternative rendering of Crusoe's first harvest of "20 bushels of barley." Again, a trifling liberty taken with the author's meaning will elucidate the apparent paradox, "but 52 thumbs" (*c*), and the deposed captain's assertion, "there were still twenty-six hands on board."

"Robinson Crusoe" is peculiarly rich in Biblical allusions, thereby rendering it an easy matter for the teacher to test his pupils' familiarity with the Scriptures. The shipwrecked mariner's first prayer, "if I may call it so," that he had made for many years, "Lord, be my help; for I am in great distress," is a quotation from the Psalms (*d*). It should, again, be a comparatively easy task for a boy or girl to locate the passage which the Spaniard, rescued from the cannibals, referred to in advising delay on Robinson's part instead of sending off there and then for the other Spaniards: "You know," says he, "the children of Israel, though they rejoiced at first for their being delivered out of Egypt, yet rebelled even against God himself that delivered them, when they came to want bread in the wilderness" (*e*). Crusoe's work was much impeded by the lack of suitable tools—hence we are not surprised that the making of a chair occupied all his time on the 7th, 8th, 9th, 10th, and part of the 12th of a certain November. The omission of the 11th from this time-table postulates a praiseworthy motive on his part, which is explained by a reference to Exodus xxiii. 12 (*f*).

The use of a dictionary should not be overdone, but the teacher will find abundant opportunities of putting his comments into such a form as will necessitate, in most cases, the employment of one. "Upon this I seemed a little angry with the captain" was a pious stratagem of "simulated ire" which had its due effect upon the captured mutineers (*g*). The vicissitudes of existence, though known subconsciously to every schoolboy, are put in a clearer light when he recognises them in a simpler phrasing—"human affairs are all subject to changes and disasters" (*h*). Examples, too, are fairly frequent of the orthographical changes that have taken place in our language since Defoe's days. "There are two 'i's' in this word now" may possibly astonish the young person who can see no phonetic justification for either "villany" or "villainy" (*i*). Of a somewhat similar nature are periphrastic comments in a foreign language—most dictionaries include lists of such phrases. "Prayed to God again; but was light-headed," is a melancholy instance of poor Crusoe's isolation, and there can be small wonder that in times of exceptional stress he was *non compos mentis* (*j*).

An exercise that is particularly useful consists in the teacher's demand for cross-references in substantiation of Robinson's statements. His rigging Friday up in a pair of linen drawers, "which I had out of the gunner's chest I mentioned," is a case in point, necessitating the turning back through several pages to the passage recording his recovery of these articles, or rather of the box containing them (*k*). Similarly, "my principal guide and privy counsellor was my good ancient widow, who, in gratitude for the money I had sent her . . .," reminds us of a commendable action that had taken place many years previously, and is recorded in its chronological place (*l*). It is not often that our author is caught napping; there is, however, an instance of inconsistency in the statements: "my times of work . . . from twelve to two I lay down to sleep" and "it happened one day about noon, going towards my boat" (*m*).

My own pupils, I find, are very keen on "comments" that are, more or less, broadly—farcical, shall I say? Friday's unceremonious awakening of his master on the morning of the cannibals' arrival left the latter little time for ablutionary exercises; consequently the query, "Did you clean your teeth?" whilst probably causing a temporary twinge of conscience to more than one casual auditor, was the source of no intellectual trouble in assigning it to its proper place in the text (*n*). Similarly, being well aware of their master's self-indulgence in this respect, his offer to remedy Robinson's deficiency—"the second thing I would fain have had was a tobacco-pipe"—was at once appreciated and "spotted" (*o*). One has, however, to be careful in this respect. I remember a chorus of stern disapproval anent my allusion to "I took four muskets, and loaded them with two slugs" as "nasty, slimy things" (*p*).

I will not bore my readers with further instances of the method which I have now outlined. One or two remarks in conclusion. Four or five pages, previously read through in class, are taken at a time, and ten "exercises" are given out to the class to be worked as a "home lesson." I find that this is quite sufficient for one hour's work—the boys here are all under twelve (also, be it added, the drawing up of them provides a reasonable amount of work for the master). One advantage of this method is the obvious claim that it makes upon the boy's powers of concentration; another lies in the fact that he is, on a small scale, engaged in the process of finding things out for himself. Finally, it may be added that though the exercise is a written one, the actual amount of writing, considering the time taken in working out the exercises, is small, and the risk of bad writing is thereby proportionately diminished. Subjoined are the above exercises as they would appear in the pupils' exercise-books. (Blackie's edition of "Robinson Crusoe" is the one used; it will be

noted, of course, that the exercises in this case are not confined to a limited number of pages.)

Key.

	Remarks	Page	Line
(*a*)	376 years ago	9	1
(*b*)	5120 gills...	107	31
(*c*)	but 52 thumbs	216	41, 42
(*d*)	Lord, be my help . . . Reference?	Psalm	71, v. 12
(*e*)	Grumbling Israelites ,,	Exodus	xvi. 3
(*f*)	For the 11th was a Sunday ,,	Exodus	xxiii. 12
(*g*)	Simulated ire	231	4, 5
(*h*)	Vicissitudes of existence	36	31
(*i*)	There are two "i's" in this word now	215	36
(*j*)	*Non compos mentis*	78	1
(*k*)	Page 175, l. 32 ... Reference?	163	29, 30
(*l*)	Page 252, l. 39 ... ,,	Exodus	xvi. 3
(*m*)	But what about p. 65, l. 33? .	131	35
(*n*)	Did you clean your teeth?	209	16
(*o*)	I will give you one of mine	94	36
(*p*)	Nasty, slimy things!	194	27

Newbury House, Bishop's Stortford. E. W. Hurst.

Practical Introduction of Logarithms.

I was very much interested in the article contributed by Prof. Bryan on Logarithms to the December (1908) issue of The School World. For some time I have been considering methods by which to introduce the subject of logarithms to beginners. I believe it to be unnecessary, as well as foolish, to postpone the introduction of this branch of mathematics until the pupil has gained a knowledge of the exponential theorem, or even until he can wend his way through the logic attached to the theory of indices. At the same time, I deprecate putting logarithmic tables into a pupil's hands before he has had some preliminary exercises leading up to an intelligent use of the tables. Logarithms are to be used by him for abbreviating work in multiplication and division and in extracting the roots of numbers. The pupil must, therefore, have clear notions as to the approximations in the arithmetical work. He must know what is meant by the *n*th root of a number. He must know what a symbolical expression like $x^{\frac{5}{7}}$ means. He may not be able to appreciate in its entirety the delicacy of the instrument put into his hands. He must, however, thoroughly understand what he is using the tables to look for, and to what extent they enable him to get what he is looking for. Otherwise his work, however accurate it may be, is for him mechanical and unintelligent, and therefore mischievous.

In the hope of eliciting other methods from your readers, and following up Prof. Bryan's valuable article, the writer submits the following course, which he has adopted with his own pupils.

The pupils know how to use decimal fractions. They are given some simple exercises in contracted work in decimals. They have no knowledge of indices other than integral. The teacher tells them that the decimal fraction 1·00023025 is such that $(1{\cdot}00023025)^{10000}$ is equal to 0·999+, or, read to the 3rd decimal place, equal to 10. The pupil probably asks how this is got. He must take it, in the first instance, on faith.

The teacher then proceeds to give exercises like the following:

Work out by contracted multiplication powers of 1·00023025; *e.g.*, $(1{\cdot}00023025)^{30}$, *to 3rd or 4th decimal place.*

Given that $(1{\cdot}00023025)^{3010}$ *is equal to 2 correct to the 3rd decimal place, find an integer* x *so that* $(1{\cdot}00023025)^x = 2{\cdot}155$.

When 2 is multiplied by 1·00023025, there is added to 2 by approximate multiplication 0·000460, and 0·000460 is added on each time the factor is used until the multiplicand has become such that 0·000461 will have to be added, and so on. We could proceed thus until the multiplicand read to the 3rd decimal place was equal to 2·155. A quicker, though rougher, approximation could be got thus: when 2·155 is multiplied by 1·00023025, and taking the contracted multiplication to the 6th decimal place, 0·000496 is added.

Therefore, on the average, 0·000478 is added each time the factor is used.

Therefore, to give 0·155000 added on to 2, the factor has to be used 324 times; that is, $(1{\cdot}00023025)^{3324}$ is equal to 2·155.

Given that $(1{\cdot}00023025)^{3010} = 2$, *find an integer* x *so that* $(1{\cdot}00023025)^x = 3$.

Take it in stages.

Find the number of times the factor has to be used to raise

2	to 2·15 —→	(314)
2·15	to 2·3	(293)
2·3	to 2·45	274
2·45	to 2·6	258
2·6	to 2·75	244
2·75	to 2·9	231
2·9	to 3	147
In all		1761 times.

$\therefore (1{\cdot}00023025)^{4771} = 3$.

It is quite easy to explain at any time after this the symbols $10^{\frac{1}{4771}}$, $10^{\frac{3010}{10000}}$, $10^{\cdot 4771}$, and so give the pupil the meaning of a fractional index.

If the factor has to be used x times to give N,

it will have to be used $\frac{x}{2}$,, ,, ,, $N^{\frac{1}{2}}$

and $\frac{3x}{2}$,, ,, ,, $N^{\frac{3}{2}}$

To give a number between 1 and 10, the factor has to be used less than 10,000 times.

To multiply by the factor 10,000 times means multiplying by 10.

Thus $5{\cdot}6 = (1{\cdot}00023025)^{7482}$

$56 = (1{\cdot}00023025)^{1{\cdot}7482}$

$560 = (1{\cdot}00023025)^{2{\cdot}7482}$

To divide by 1·00023025 cancels a multiplication by the factor, and to repeat division by the factor 10,000 times means dividing by 10, or cancelling multiplication by the factor 10,000 times.

Hence $0{\cdot}56 = 5{\cdot}6 \div 10$

$= (1{\cdot}00023025)^{7482} \div (1{\cdot}00023025)^{10000}$

$= (1{\cdot}00023025)^{7482-10000}$

and this, as can be explained, may be written $(1{\cdot}00023025)^{\bar{1},7482}$ where a comma is used to separate $\bar{1}$ from 7482.

Negative indices here can be explained.

The pupil could now get a table of logarithms (four places), as by Bottomley.

Take a specimen line:

55	0	.	.	.	.	.	.	1	2	3	4	5	6	7	8	9
	7404	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

Explain that 7404 is the number of times the factor has to be used to give 5·50 correct to 3rd decimal place, or $(1{\cdot}00023025)^{7404} = 5{\cdot}50$.

As an exercise the pupil should be asked to complete the difference column, to fill in the numbers below 1, 2, 3, 4, 5, 6, 7, 8, 9.

Thus when 5·5 is multiplied by the factor *once* we get 5·50127
twice ,, 5·50254
3 *times* ,, 5·50381
4 ,, ,, 5·50508

Thus under 1, 2, 3, 4, 5, &c., we must put
1, 2, 2, 3, 4, &c.

Simplify $\frac{0{\cdot}03875 \times (28{\cdot}624)^{\frac{1}{3}}}{23{\cdot}764 \times (7{\cdot}864)^{\frac{2}{3}}}$.

This is equal to

$$\frac{3{\cdot}875 \div 10^2 \times (2{\cdot}8624 \times 10)^3}{2{\cdot}3764 \times 10 \times (7{\cdot}864)^{\frac{2}{3}}}.$$

To give this expression the factor has to be used:

In multiplication	← →	In division
5883 times		20000
4567		3758
4567		10000
4567	$\frac{2}{3}$ of 8956 =	5971
30000		
49584		39729
39729		

The factor is used 0,9855 times.

The value of the number is 9·672.

The pupil by this course has exercise in contracted decimal work. He is introduced to indices other than integral. He is led to appreciate how far the method of approximation extends. The teacher can use his discretion as to the time when he should introduce the word logarithm to the base 10.

The only change in the matter of writing out would be changing a comma into a decimal point.

The pupil should, in my opinion, at no time be given a rule to find the characteristic of a logarithm. All numbers should be written as $N \times 10^x$, where N is a number between 1 and 10 and x a positive or negative integer.

Grammar School, Aberdeen. C. McLEOD.

DR. McLEOD'S method is extremely interesting. Its special feature appears to be the training in forming by contracted methods any power of a number differing slightly from unity, such as 1·00023025. Unfortunately, contracted methods appear to be a bone of contention about which doctors disagree at the present time. Personally, I do not see how they can be dispensed with, and I am glad to see Dr. McLeod's opinions on this point.

The work can, of course, be greatly simplified by performing the preliminary drill with such a base as 1·0001, and though this leads up to the natural instead of the decimal system of logarithms, the work at the outset has rather a less artificial appearance. To eight places the successive powers are 1·0001, 1·00020001, 1·00030003, 1·00040006, and the law of formation is easily seen by inspection. This is the method to which I alluded in my article, by which it can be shown that a system of logarithms can be found which is sufficient for calculations to any required degree of approximation.

There are two ways in which a series of numbers may be built up, one by repeated additions of, say, 0·0001, the other by repeated multiplications by a factor slightly greater than unity. If we take the factor to be 1·0001, we notice, first, that there is no limit to the series of powers obtainable. For we see that $(1{\cdot}0001)^n$ is greater than $1+0{\cdot}0001n$, and hence 10,000 multiplications give a number greater than 2, double that number of multiplications give a number greater than 4, and so on. Again, each power exceeds the previous one by 0·0001 of itself, and thus the powers may be taken to represent to a sufficient degree of accuracy the different numbers of five significant figures when these numbers are slightly greater than unity (or a power of ten), and of four significant figures when they are slightly less. It is noticed, also, that $(1{\cdot}0001)^n$ is equal to $1+0{\cdot}0001n$ to four significant figures, until the digits from the eighth place have carried up to the fourth place.

If two numbers are the result of, say, 71 and 536 multiplications, their product is the result of 71+536 multiplications, and this is the fundamental property of logarithms.

G. H. BRYAN.

An Exercise in Practical Geography.

THE class has in a previous exercise found that the area of the county of Yorkshire is roughly 6,000 square miles: the problem now is to find the area of the catchment-basin of the Yorkshire Ouse, so that by a little discussion the idea of the unity of Yorkshire as the broad-acred county held together by a river basin may be established.

Fig. 1 shows the method adopted in the previous exercise to trace the area of the county as a whole, and in this

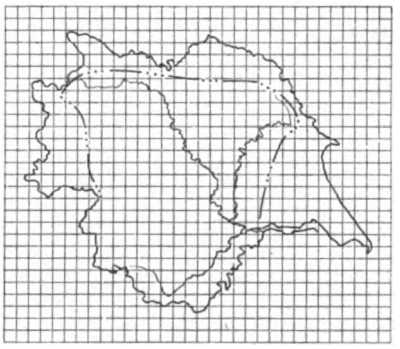


FIG. 1.

exercise of the river basin. The river and two tributaries are traced from the atlas on transparent squared paper; the watershed is put in approximately by passing a line—shown dotted in Fig. 1—between the Ouse river and other rivers which rise or flow in its neighbourhood, but are not members of the Ouse system. As Fig. 1 shows, the watershed roughly corresponds to the county boundary on the south and south-west.

The squares are counted under two heads, complete and broken. The exact number of complete squares is thus found, and an estimate added for the parts of the broken squares. By measurement on the scale of the map, it is found that one square represents so many square miles, and from this the area of the basin is calculated. Each boy works out a result for himself from his own tracing, and when this has been done the class-work begins.

Step 1.—The pupils announce their results, which are written on the board as follows: 3,728, 3,600, 3,840, 4,015, 4,571, 4,453, 3,600, 4,331, 4,139, 2,500, 3,371, 3,331, 4,032, 3,768, 3,724, 2,989, 3,955, 4,032, 4,056, 3,431, 3,985, 4,617, 3,464, 3,276, 4,484, 4,050 square miles. While this is being done the boys take a lively interest in the various results, and the teacher has opportunities for some discussion as to the values of the obviously poor results and as to the idea of a certain amount of approximation to round numbers.

The pupils are then asked to suggest an average value for the required area from a simple inspection of the results as they are seen on the board; no calculation is allowed; observation and inference are alone desired. The

answer is given: between 3,300 and 4,600, about 3,900 square miles.

Step 2.—The class is instructed to group the results and to make the following table, which is written on the board:

Values	No. of boys with these values	Values	No. of boys with these values
Below 3,300	... 3	3,901–4,200	... 8
3,301–3,600	... 6	4,201–4,500	... 3
3,601–3,900	.. 4	Above 4,500	... 2

The pupils now examine this table and find an approximate average.

Answer: between 3,300 and 4,200, probably about 3,800.

Step 3.—The graph (Fig. 2) is then drawn on the board from the table, and the pupils point out a suggested

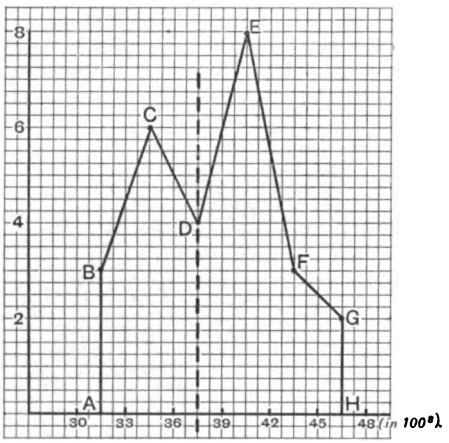


Fig. 2.

vertical line which would divide, in their opinion, the area ABCDEFGH into two equal parts.

First suggestion: a vertical through D.

Second suggestion: a line a little to the right of D.

D represents 3,750; the correction gives about 3,900.

Step 4.—The calculation of the average by the ordinary method affords an exercise in tots, and gives the result 3,820.

Final conclusion.—The area of the basin of the Yorkshire Ouse is approximately 3,800 square miles, which is about two-thirds of the area of the county of Yorkshire.

The preliminary stages of this work may usefully be set as an exercise for homework, in which case the rest of the work can be performed comfortably in one lesson.

B. C. Wallis.

L.C.C. Camden Secondary School.

English in the London Matriculation Examination.

The London Matriculation examination is becoming more and more generally recognised as a test of a sound education, and I take it that the object of the examiners in English is to develop and foster a real taste for and knowledge of English literature. In the January paper they seem to me, however, to have lost sight of this object. The majority of candidates take this examination as soon after sixteen years of age as possible. Therefore we must consider that as the age of the normal examinee.

The questions dealing with literature are:

6. Literature—Historical Fiction.

(*a*) Mention (with the names of the authors) standard historical novels in which any of the following characters are introduced: Mary, Queen of Scots; Queen Elizabeth; James I.; Oliver Cromwell; the Old Pretender; the Young Pretender; Savonarola; Erasmus; George Washington.

(*b*) Describe a notable scene from one of the works you name, in which the character of one of the above-mentioned historical figures is portrayed.

7. Literature—Poetical Passages.

Complete *nine* of the following passages (not giving more than a line or two in any case), and name the poems from which they are taken:

(i) When pain and anguish wring the brow . . .
(ii) God made the country . . .
(iii) And fools, who came to scoff . . .
(iv) None but the brave . . .
(v) To me the meanest flower that blows . . .
(vi) Where ignorance is bliss . . .
(vii) Kind hearts are more than coronets . . .
(viii) And coming events cast . . .
(ix) A thing of beauty . . .
(x) He prayeth best who loveth best . . .
(xi) Hope springs eternal . . .
(xii) And how can man die better . . .

No. 6.—How many boys of sixteen will the examiners find, I wonder, who have read any books by the authors of "Henry Esmond" and "The Virginians," or of "Romola"? Indeed, can these authors be considered as affording the proper mental pabulum for young people of about sixteen? With all deference, I suggest that a syllabus of certain specified standard writers should be drawn up as representing what a well-read boy of sixteen should be acquainted with.

No. 7.—The same remarks, I think, apply here. This type of question, containing as it does so many quotations from poems which are rather outside the range of a boy of sixteen, seems too conducive to the method of cramming typical and likely fragments from a book of selections. Ought such boys to be expected to have read Cowper's "Task," Dryden's "Alexander's Feast," Wordsworth's "Intimations of Immortality," Pope's "Essay on Man," and Keats's "Endymion"? I have an idea that these poems represent a standard of literature that would be better left for a later stage of university education. I have submitted these quotations to a lecturer on English literature at one of our universities, who is an M.A. of London in English. He was only able to say where nine of the quotations came from. Not many matriculation candidates could be expected to do as well.

Surely in a paper demanding such a wide range of reading the number of alternatives should be proportionally much larger.

A. E. Barker.

Royal Grammar School, Colchester.

[Our correspondent appears to have lost sight of the fact that question 7 consists of two parts. We have little doubt that candidates completing nine of the passages would have satisfied the examiners on the question. From inquiries we have made, moreover, we are able to state that the question was treated with confidence by the majority of candidates and gave nothing like the trouble anticipated by our correspondent.—Eds.]

Latin in the Oxford and Cambridge Locals.

An article by Mr. Jones in The School World for September, 1908, directs attention to a discrepancy which has for some time been evident and now urgently requires a remedy. It is quite plain that the Oxford and Cambridge Local papers in Latin are survivals of an older day. There are, no doubt, several schools well served by them still, but they cannot possibly be regarded as good tests

for the average boy or girl who spends no more than three or four hours per week on Latin. It is from suggestions made by teachers conversant with modern conditions that a remedy is most likely, in time, to be evolved. For that reason I venture to offer the following criticisms and suggestions.

To deal with the Junior Locals first, in particular that of the Oxford University. The two papers contain four sections: grammar, composition, translation, unseens. How much grammar is expected? Tradition alone prescribes the amount (there is no indication in the regulations), and that amount is in excess of what is required at that stage. Could it not be stated clearly and in detail how much grammar is expected to be known at each stage? As regards composition, all the guidance we get in the regulations is that the sentences are to illustrate common constructions. Who is to say which are common and which are not? It would not be difficult to agree upon a syllabus of constructions upon which the great majority, at any rate, of the sentences should be set. The educational importance of this is great. Latin constructions are by no means easy to the average boy. He requires a good deal of practice on each one, and if he attempts too many he will probably forget all. A detailed syllabus is offered in geometry in the Oxford Senior Locals. Why not in Latin? As regards translation, the average boy with a minimum of time at his disposal will probably take Caesar; and here there are two points I would urge. In the first place, Caesar, *en bloc*, is not the most suitable choice for junior pupils. Though much is fairly easy, much is very difficult for them. Caesar should be read in episodes, and I cannot see what objection can be brought against a selection of episodes if only each one forms an artistic whole. A battle scene, the fortification of a camp, a description of the inhabitants of a country, or similar selections have at least two advantages—they give a wider and more varied view of Caesar's work, and they can be so arranged as to avoid the too difficult chapters. In the second place, some books of the "Gallic War"—*e.g.*, the first—are not only too difficult in parts, but also too long. The result of this is disastrous. It leads either to cramming or to the deduction of time from the other sections of the work. As regards unseens, the problem is difficult; and different views are held. Yet surely no construction should be admitted into an unseen which a boy has had no opportunity of meeting in preparing the other sections of his work, and if the vocabulary goes beyond that proviso, it should not be so impossible for the average boy to divine the meaning as it has been sometimes in the past.

In the Senior Locals reforms are even more urgently needed. Grammar is just as big or as little as you like to make it. I would suggest that the amount of grammar to be known should be definitely stated, even if special questions in grammar are not omitted altogether. A certain amount of Vergil or Horace should be an essential. The absurdity by which a candidate was forbidden to combine verse with prose, and was confined either entirely to Caesar or entirely to Vergil, is, happily, to be removed this year. In regard to Latin prose composition, a simplification of the vocabulary could be effected without loss. The peculiar educational value of Latin prose lies in its unsparing demand for clearness of thought and rigorous precision of language, but this can be tested within the limits of a comparatively small vocabulary. You may ask a boy to translate "the ball fell into the pond." He will not be able to do it; and when he has done it he will not be much the better for it. But his treatment of such a sentence as "the impossibility of achieving such an object must be obvious to everyone" would form some test of his intellectual calibre, while the vocabulary required is small.

The above remarks have reference only to the average boy or girl. As for the brilliant boy, it is not difficult to legislate for him; but the average boy is one who often begins the language with a commendable eagerness, and makes good progress until we ask of him what he cannot give and what we ought never to be obliged to ask. Nor do I think that the interests of the brilliant boy need be sacrificed in the least. It is a fallacy to suppose that the brilliant pupil takes a different path from that of the average pupil. He takes the same path, but he takes it more quickly and goes further along it. As to the charge of cramming, I have no fear of it at all. If cramming pays it is the fault of the examiner, for there is no subject in which it may be more easily detected and obviated than in Latin. Perhaps it will be said that reforms of the kind I have indicated would lower too much the standard of the papers in Latin. But what I am pleading for is not a low standard, but a *different* standard, and, above all, a *definite* standard, with the overthrow of a certain amount of lumber which ought not to be recognised as a part of any school standard.

Of course these remarks are merely suggestions, upon which I hope further suggestions will be made. More important is it to recognise that the time has come for something to be done, and if all teachers who are dissatisfied with present conditions could come to some arrangement reforms would not be long delayed.

P. C. GREEN.

The Grammar School, Ormskirk.

I THANK the editors of THE SCHOOL WORLD for permitting me to see Mr. Green's letter, with which I am in substantial agreement. The main thing is for the examiners to give a more detailed syllabus. The contents of it would, perhaps, cause some discussion; but Prof. E. V. Arnold has now published his excellent "Basis Latina," a book which, I think, ought to be brought to the notice of those responsible for the Local examinations. The truth seems to be that the examiners are out of touch with the schools, and are ignorant of the changes which must be made if classics are going to be retained as part of the curriculum. The scheme I proposed last September in THE SCHOOL WORLD, which is virtually that of Prof. Arnold, involves no lowering of the standard. I ask for full details about the accidence, syntax, and vocabulary the scholar is supposed to know, and urge that the pass standard be raised from 30 per cent. to at least 50 per cent. of full marks. I would also suggest that a piece of "free composition" might very well be included. It gives the candidate a chance of showing what he knows, whereas translation is often merely a means of showing what he does not know.

I sincerely hope that many teachers will follow Mr. Green's example, and state publicly their views upon this not unimportant topic.

W. H. S. JONES.

St. Catharine's College, Cambridge.

Volumetric Combination of Hydrogen and Oxygen.

IN the January number of THE SCHOOL WORLD, pp. 39 and 40, an account is given of an "unorthodox" method of showing the volumetric combination of hydrogen and oxygen. The writer recommends that the volume of oxygen added should not exceed *three graduations* of the eudiometer, and quotes the following result of an experiment: 3·3 volumes of hydrogen combine with 1·7 volumes

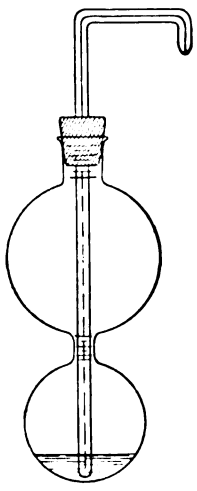
of oxygen. May I point out that arguments are ill-founded if they are based on the measurement of small quantities by methods liable to a relatively large experimental error? A class of boys, however young, should be given common-sense methods. They ought to be quite aware that their measurements of such small volumes as 3·3 c.c. or 1·7 c.c. in a eudiometer are untrustworthy, and they should be led to take such quantities as to render the error of reading sufficiently small.

The reason given for this thoroughly unscientific method is that the class would not appreciate the corrections for differences of pressure which would be necessary if larger and more measurable volumes were taken. In a logically arranged course methods of reading volumes of gases and reducing to standard pressure would come before the determination of the volumetric composition of water, and should be well driven home before notions of chemical composition are introduced. W. H. HEWITT.

Strand School, London.

Apparatus for Determining the Coefficient of Expansion of Gases.

Description.—The figure shows the various parts of the apparatus. The neck of the apparatus and the constriction between the bulbs are marked with fine lines, and the rubber stopper carries a thin tube with a narrow bore.



Use.—Weigh the apparatus, empty. Introduce by means of a pipette strong sulphuric acid into the lower bulb, so that, on replacing the stopper, the acid stands just above the constriction. With the stopper removed, cool down below atmospheric temperature by immersion in cold water. Replace the stopper, and notice its position with reference to the graduations on the neck. When the apparatus takes the temperature of the air, the capillary tube will be full of liquid, and the level of the acid within the constriction. Notice this position, weigh again, and take the temperature. Clamp the apparatus down in a beaker of water, boil the water for some time, and allow the acid which is driven out to fall into the water. When no more acid escapes remove the apparatus, dry, and weigh again.

To find the total volume of the apparatus, fill with water and weigh again. (This may be done previously, before using the apparatus. If the apparatus is calibrated, only the weighing after the experiment is finished is necessary.)

Example.—The results were obtained from the above apparatus.

Weight of apparatus and sulphuric acid ... ... = 88·00 grams
" " ... ... = 41·05 "
" " and acid after experiment 47·66 "
Total weight, filled with water... .. .. 137·00 "
Initial and final temperatures ... 15·0° and 99·5° C.

$$\therefore \text{Volume of acid up to the constriction} = \frac{46·95}{1·84} = 25·53 \text{ c.c.}$$

$$\text{Volume of acid driven out} = \frac{40·94}{1·84} = 22·25 \text{ c.c.}$$

" " air in large bulb ... = 95·95 − 25·53 = 70·42 c.c.

$$\text{Coefficient of expansion} = \frac{22·25}{70·42 \times 84·5} = 0·00369.$$

Advantages.—(i) Large volume of gas; (ii) volumes deduced from weights; (iii) simple, compact, and easily manipulated; (iv) the strong sulphuric acid has no appreciable vapour pressure at 100°, and removes all water vapour from the air; (v) can be readily used for various gases.

Strand School, London. J. W. YATES.

Quantitative Chemical Experiment.

IN last month's issue a correspondent desires to know the name of any substance which, without the adoption of any precautions, will undergo a quantitative change when heated in a crucible with an ordinary Bunsen. Any one of the following substances would seem to be suitable, viz., hydrated barium chloride, copper carbonate, nickel carbonate, and perhaps magnesium sulphate. The hydroxides of many of the heavy metals also—*e.g.*, iron, nickel, or copper—prepared by precipitation and dried at a low temperature, ought to be quite satisfactory. Many substances, like potassium chlorate, may be successfully decomposed quantitatively, with very little care, if a crucible with a lid altogether too small be used. The lid ought to fit right inside the top of the crucible.

I confess, however, that I do not know what may lurk behind the phrase "without the adoption of any precautions." If the words were to bear literal application to the ordinary run of junior students they would demand the existence of a substance which would refuse to be knocked out of the crucible, which could not be wrongly weighed, which would not mind being occasionally poked with a pen handle, and last, though not least, which would register its percentage loss of weight automatically.

J. H.

WITH regard to Mr. Hart-Smith's query respecting a substance which decomposes in a crucible over the ordinary Bunsen flame, I would recommend him to use barium chloride crystals. If he will recrystallise the material obtained from a dealer, and work with 1 to 2 grams in the crucible, he will find that the several experiments made by the individual students in a class will lead to consistent results. WM. T. CLARKE.

The Secondary School, Heanor.

MR. HART-SMITH should try barium chloride crystals. Commercial carbonates of magnesium and lead are also satisfactory, their compositions being practically constant. *Thin* copper heated with sulphur is trustworthy if the excess of sulphur be burnt off. N. BARON.

Modern School, Maidenhead.

[OTHER letters mentioning the same compounds have been received.—EDITORS.]

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HOW TO MANAGE HEADMASTERS AND HEADMISTRESSES.

By AN INSPECTOR.

THE inspection of secondary schools is a development of recent years, and it is inevitable that in work of so delicate a kind perfection should be hard of attainment. When an appointment is made to a headmastership, there are traditions to guide the newcomer; the assistant-master has a very fair idea of what is expected of him in a new post, and—if he has been trained, systematically or by experience—he knows what methods to employ. The newly appointed inspector, on the other hand, has to learn his business; as we have no school for examiners, so also there is no training college for inspectors.

When it became necessary to appoint many inspectors of secondary schools (it is only of these that I have any experience), every care was exercised in choosing them; but it would be idle to deny that some turned out to be less suitable than others, and that serious mistakes were sometimes made. Thus opinions were expressed as to the teaching of subjects with which the inspector had only the slightest acquaintance; a stay of ten minutes in a class-room was considered to supply ample information about a teacher's efficiency; and the attitude adopted towards the staff was overbearing and intimidating.

There was also another type of inspector, belonging to an older generation. He was generally a courteous gentleman, who undertook the examination of a whole school in all subjects, setting the papers, correcting the answers, and visiting the school for the purpose of conducting an oral examination. He rarely expressed views as to the organisation, curriculum, &c.; and what he did say in his report was generally very kindly, adverse criticism being coated with sugar, which made the pill quite pleasant to take.

This was examination rather than inspection, and it affected mainly the smaller schools. Inspection, as it is now understood, was unknown to most secondary schools. The headmaster reigned supreme, practically free from outside criticism; and the assistant-master was, as a rule, left to teach to the best of his ability. Within his class-room he, too, was free from intrusion. I have known of a teacher who would not go on with his work while his headmaster was present; and I have heard of many who refused visitors to the school the privilege of watching their teaching.

It is clear that such headmasters and teachers would not like the idea of inspection. The more enlightened did, indeed, realize that some advantage might be gained; but even they felt uncomfortable at the thought of their castle being invaded. Many were quite contented with their work; and in some respects they were justified. Ever since the days of Arnold and Vaughan the cultivation of character had been regarded as the essential object of public-school life, and in many schools the tone was indeed excellent—if we make allowance for some curious and not altogether satisfactory by-products. As for the education of the intellect, it was conducted on certain traditional lines, which for decades had shown but little change. Now and then a brilliant teacher, in an isolated way, had been an educator in the best sense; too often the methods were wasteful and faulty. Even in matters of class management the most elementary principles were ignored; inordinate importance was attached to marking and place-taking, the memory was cultivated at the expense of the reasoning faculty, lessons were "heard," &c. Every school was independent of every other, and outside criticism was unknown.

Schools somewhat like this still exist, and the inspector whose duty it is to report on such a school has no easy task. If the headmaster is sympathetic, anxious for the welfare of his school and conscious that it is not perfect, the inspector's task is hopeful. Difficulties there will still be; thus, the headmaster is too often without clerical assistance, and it may prove troublesome to get the preliminary materials (I have known a headmaster who possessed no time-table of his school). It is a great pity that governing bodies do not always provide secretarial help for the headmaster; without one he is condemned to much drudgery and waste of effort, which make it impossible for him to give full attention to

what is more properly his sphere of activity. If the headmaster can be persuaded to look upon the inspector as a friendly adviser, and not as an interfering busybody, and if he can tactfully be brought to speak quite frankly about the adverse influences from which no school is free, but which vary so much in different schools, it is possible for the inspector to draw up a report in which he can both express his appreciation of honest effort and worthy achievement, and suggest means for improving what is defective, at the same time making due allowance for the difficulties which have hampered progress. A first inspection, well conducted, may be of great advantage in encouraging men who hitherto have had no recognition by experts of the good work they are doing; it may give them welcome suggestions for the development of their work along fresh lines; and it will predispose them more favourably to further inspection. It is unnecessary to show how regrettable are the consequences of a first inspection badly conducted.

When the headmaster is doing work, more or less good, which he considers perfect; when he has been at the head of an outwardly prosperous school for a long time, and is proud of it, not without some justification; when circumstances have forced an inspection upon him: then the inspector's work is not enviable. He is treated as a privileged spectator rather than as a critic; he is expected to admire, without finding fault. If in conversation he suggests an improvement, he is at once told that the headmaster's experience is opposed to it, that it would go against the most cherished convictions of a lifetime; and the inspector is informed, more or less courteously, that he has "given himself away." If the report contains any adverse criticism, it is regarded almost as a personal insult; and the headmaster makes rare fun of the inspectors when the report comes up for discussion at a meeting of his governors. It is even not impossible that such a headmaster may express to his staff a strong opinion as to the futility of inspection, before the inspectors visit the school; and then the attitude of the staff may make it very hard for the inspectors to perform their task. Headmasters of this type (fortunately there are not many) cannot be "managed."

The most distressing duty that can fall to the lot of an inspector is to have to deal with a school that is thoroughly bad. As in every other profession, the man appointed to direct an institution does not always turn out a success, and so there are some headmasters who are quite unfit to occupy their positions. They may possess some excellent qualities, but they are notably lacking in the power of organisation; they interfere with the work of their assistants in a foolish, unintelligent way, and their discipline is fitful. They are generally devoid of humour and altogether incapable of seeing anything faulty in their work. It may happen that they have the confidence of their governors, who not infrequently are men of no educational experience whatever; and the inspector who shows up the unsound condition of the school is considered to be prejudiced or incompetent.

Reviewing my experience as a whole, I gladly bear witness that in the majority of cases my work has been rendered very pleasant by the courtesy of the headmasters and headmistresses, and I have not felt any need of "managing" them. The idea of inspection is becoming more familiar, and the number of capable inspectors is increasing rapidly. To be sure, the inspector's visit still gives rise to some nervousness, especially if he be an unknown quantity; and it is sometimes a little difficult to accomplish the necessary task of thawing the headmaster and his staff, of showing them that you are a man first and an inspector incidentally. On a second visit this should be unnecessary, and the inspector has the joy of being recognised as a friend, and the satisfaction of finding that suggestions made in his last report have been taken up and found conducive to the efficiency of the school.

I have sometimes wondered whether the heads of schools realise how very difficult the work of inspection is, and how much more difficult it becomes when the inspector is treated with reserve or even distrust. Further, when the inspector has done his work to the best of his ability, he should receive some appreciation. I have seen letters from headmasters pointing angrily to some petty detail in which, possibly through no fault of his, the inspector had made a mistake, without a word of appreciation for the earnest efforts which went to the production of the report as a whole. I have also seen letters in which headmasters and headmistresses expressed their appreciation without reserve, even though the report was not favourable in every respect; indeed, it is for the criticisms and suggestions that most gratitude has been expressed. I suppose one ought not to think of such things, and to do one's best regardless of praise or blame; but just as I have always believed that the teacher can do very much by encouraging his pupils and the inspector by encouraging teachers, so I feel that the inspector can be helped very much in his work if he is treated as a friend and shown some gratitude.

In conclusion, I may be allowed to add a few hints for inspectors who have had less experience than has fallen to my share.

Listen very carefully to all that the headmaster and the teachers tell you about the difficulties besetting their path. You can study the curriculum, the time-table, and the teachers' (paper) qualifications before you visit the school, and you ought to do so thoroughly; but many of the special difficulties can only be gleaned from the headmaster and the staff, and unless they are taken into account the whole situation cannot be properly estimated.

Do not try to give the impression that you know everything about all subjects; honestly to

confess that you have limitations will wake a responsive chord.

When you have written your report, put it aside for a few days, and then read it through again, paying particular attention to the adjectives.

Treat with caution the headmaster who flatters you; to be sure, it may be merely foolishness, and not calculation.

Show no resentment to the headmaster who indulges in chaff or sarcasm at your expense, or assumes indifference; for in three cases out of five it is due to nervousness, in three out of ten the man is an original and independent thinker from whom you can learn something, and only in one out of ten is he an objectionable character.

Look up to the headmaster who is quiet; probably his restraint and unassuming manner cover much strength and thought.

Exercise the greatest care in dealing with headmistresses; they are quicker to take hints and quicker to feel hurt than the men. Generally speaking, they are more careful of detail and more skilled in organisation. It is unwise to assume that any unusual feature in the working of a girls' school is due to oversight or inexperience; in most cases it proves to have been deliberately adopted to meet some difficulty, or to be an experiment of a valuable kind.

Much might be said about the way in which the assistant masters and mistresses should be "managed" by the inspector. Deplorable mistakes have been, and still are, made in dealing with them; they are generally due to a lack of tact. After all, it is tact, a sympathetic insight into human nature combined with the desire to help and to please, that the inspector needs most. Without it he may possess all the knowledge of the universities, all the skill of the training colleges, all the experience of half a dozen secondary schools, and yet be wholly unable to "manage" a headmaster and his staff, and therefore wholly unfit for the arduous but by no means thankless work of inspecting.

ON THE TEACHING OF FRENCH IN A SECONDARY SCHOOL.

By E. J. A. Groves, Lic.-ès-L.
Head of the French Department, Manchester Municipal Secondary School.

I.

SEVERAL years ago I had the privilege of assisting my friend and quondam colleague, Mr. N. W. Ross, in writing two articles which appeared in The School World (vol. vi., pp. 298 and 336), on the teaching of French at the Bradford Grammar School.

The principal difficulty with which we were confronted was how to maintain the standard of results hitherto obtained in examinations, and yet conform to the tenets of the advocates of the "direct" method. Bearing in mind the old adage, *in medio stat virtus*, we decided to steer a middle course, and to try to combine what we considered to be the best of the two methods. My views have become somewhat modified since those days, and although as director and organiser of the French department at the Manchester Municipal Secondary School I have again sought a compromise between the two methods, I am, I believe, far more in sympathy with the "reformers" than previously. But the "new" method must be methodical; it is not always so, I am afraid. I propose in the present articles to deal with the salient features of the methods adopted in teaching French at the Manchester Municipal Secondary School.

I think that it may be safely asserted that the "direct" method, in its entirety, and continued to the *very highest form*, is carried out in very few schools in the British Isles. The paucity of hours allowed by the school curriculum for the teaching of French, and the requirements of examiners, preclude this. Most schools nowadays profess to teach modern languages by the direct method. As a matter of fact, the method, in many cases, goes no further than the first and second forms. As the work proceeds, it becomes harder and harder for the teacher to keep on the "reform" track, and ultimately the one concession made to the method is to devote occasionally a few dull and tedious moments to what is termed a "conversation" lesson, wherein the teacher painfully racks his brain for suitable questions to put to his class and extracts a few monosyllabic replies.

While by no means professing to be greatly in advance of these schools—for we feel very acutely how very much is still needed ere the French in the Manchester Secondary School becomes really satisfactory—we claim, however, to be working on methods which, when fully evolved, will, we hope, give the following results:

(*a*) The pupil will be capable of readily understanding the language, and will be able to answer fluently questions put to him in the foreign tongue.

(*b*) He will have acquired a good pronunciation.

(*c*) His vocabulary will be fairly comprehensive, and consequently,

(*d*) He will be able to understand with comparative ease an "unseen" passage on its first reading.

(*e*) He will be able to translate into French, correctly and idiomatically, English prose of medium difficulty.

(*f*) He will be able to write freely in French on any topic which comes within his range of thought.

(*g*) He will acquire and develop a taste for French literature, history, and for the language generally.

The Manchester Municipal Secondary School is dual, and consists of nearly one thousand pupils of ages varying from twelve to eighteen. The school is divided into six forms, of which the sixth is the highest. Owing to the large number of pupils, the forms are necessarily sub-

divided in classes, each containing an average of thirty pupils.

The forms are as follows:

Form I., consisting of four classes for boys and three for girls.

Form II., consisting of five classes for boys, four for girls.

Form III., consisting of three classes for boys, three for girls.

Form IV., consisting of two classes for boys, two for girls.

Form V., consisting of two classes for boys, one for girls.

Form VI., mixed.

Thus making a total of thirty classes.

The French is taught by a staff of ten teachers, all of whom have studied the language abroad for some considerable length of time.

The Manchester Education Committee, recognising the difficulty of keeping such a large number of classes taught by different teachers on the same lines, have entrusted the direction and organisation of the French to a central authority.

The French course may roughly be divided as follows:

The first stage, comprising Forms I. and II.

The second stage, comprising Form III.

The third stage, comprising Forms IV. and V.

The fourth stage, consisting of the VIth Form.

First Stage.—The initial work of this stage is very similar to that practised in all schools where French is taught on "reform" lines. From the very first, names of objects in the class-room, parts of the body and clothing, expressions of daily use, songs and games, pictures, object-lessons, &c., are given by the teacher and practised by the pupils. But we especially attach importance to the verb. Our aim is to try to ensure that a child may be able to manipulate easily all the verbs, whether regular or irregular, which depict the ordinary actions of everyday life; first of all in the present, perfect, the "immediate" and ordinary future, the imperative; later in the remaining tenses of the indicative mood, in their affirmative, negative and interrogative forms; and to be able to use them readily and fluently with the conjunctive pronouns.

It is our experience, and probably that of most French teachers, that the child has very little difficulty in picking up quite a respectable number of nouns, adjectives, and even verbs, providing that these verbs are in the infinitive; but that, even in the higher forms, it is only with the utmost difficulty that he can speak a sentence in French, introducing the verb in its correct form and tense. The sentence is rendered still more halting if there has to be introduced in it direct or indirect conjunctive pronouns. Such sentences as the following should trip readily from the child's tongue, instead of being the laboured efforts which they nearly invariably are: *Je le lui ai donné. Donne-le lui. Lui en a-t-il parlé? Envoie-le moi,* &c.

We want, in this respect more especially, to develop in him *Sprachgefühl*, that is to say, an intuitive sense of what is correct in the language, and it is in the manipulating of the verb that lies the child's chief difficulty in acquiring that ideal of all reform teachers.

During this and the following stages grammar is taught, so far as is possible, by the inductive process; that is to say, the examples are collected first and the rule is formulated afterwards.

The advantage of teaching grammar inductively is recognised generally, but involving, as it does, far more work and thought on the part of the teacher, it is not, in many cases, so thoroughly carried out as it deserves to be. For, by omitting the teaching of grammar inductively, a valuable means of training the mind to reason correctly from given data is neglected.

As the child advances in its knowledge of the new tongue, great importance is attached to the committing to memory of numerous anecdotes and poems in French, dealing with simple incidents of ordinary life. It is, of course, essential that all "memory" pieces should be understood thoroughly by the child. The principal phrases and idioms occurring in these pieces are then introduced into numerous English sentences, which the pupil must put into French. As the child's stock of pieces accumulates, many of the phrases contained in them are re-introduced in simple stories which the child has to translate into French.

The teaching of phonetics at this stage has been purposely left to the last.

During the first four or five weeks, the teaching is entirely oral, and the phonetic script only is used at this introductory stage. Much practice is devoted to the foreign sounds, and the children are shown *how* to produce these sounds.

The prejudice which numerous professedly enlightened modern language teachers have towards the using of phonetics is very remarkable. I have often heard teachers say that they do not believe in phonetics. Their principal argument is, that the child will be confused by the use of unfamiliar script, and will be unable to spell correctly when he is introduced to "orthography."

I am inclined to think that the principal objectors consist generally of those who have no real knowledge of the science of phonetics, and have never really tried it in their classes. Consequently, they unconsciously act upon the old axiom of the Middle Ages, *Graecum est, non legitur,* and they declare that they will have none of it.

With some, phonetics means, solely and simply, the teaching of a few symbols. They do not seem to realise that the signs adopted to represent various sounds are purely arbitrary, and are only used for the sake of convenience. The advantage of using the phonetic script is very obvious. It enables the various combination of letters having the same sound in pronunciation to be represented by one symbol. But "a rose by any other name would smell as sweet," and phonetics means far more than this to a competent teacher. If he is thoroughly conversant with this science, he will be able to tell the pupil *how* each sound is pro-

duced, and what organs of speech must be brought into play; he will, moreover, be able to detect immediately what is the cause of the mispronunciation of a sound. It is therefore very necessary that the teacher should possess an adequate knowledge of the science of phonetics. The number of teachers who are acquiring some knowledge of this science is on the increase. It would, however, be a great boon to many if, in all the large centres throughout the United Kingdom, courses on the science of phonetics were given regularly by competent men.

After the preparatory drill in sound-production during the first four weeks, the period of language acquisition proper follows. While great attention is then given to *written* French, *oral* French is still very prominent in our scheme, and we particularly lay stress on the following points in the speaking of French:

(*a*) The *evenness* of French syllables. The tendency of the English child is to accent the French word as if it were his mother-tongue.

E.g., təm-e-rete, instead of te-me-ri-te (*témérite*);
kəl-am-ete, instead of ka-la-mi-te (*calamité*);
bəta:jœ, instead of ba-ta-jœ:r (*batailleur*);
ləvar, instead of la-va:r (*l'avare*).

(*b*) The [y] sound, so difficult to every English child, which we practise continually, not only when it stands alone, but when it is joined to various consonants; for a child may learn to pronounce fairly correctly the sound [y] and yet be unable to say [ply] or [sy] or [ty]. He will forget to bring the tip of his tongue down to the bottom of his lower teeth after having used it in pronouncing the *pl* or *s* or *t*, and consequently the old familiar [u] will be produced instead of the correct sound.

(*c*) The *tenseness* of the French [i], which the child is prone to pronounce like the English [ii], or, what is worse, like the sound [ɪ], as in pity.

(*d*) The *length* of a vowel followed by *r*. *E.g.*, partir: pa:rti:r.

During the whole of this stage, English is spoken as little as possible; all orders are given in French, and the child is encouraged to make requests in French.

By the end of the first stage, it is hoped that the pupil will have achieved the following results:

(*a*) He will be able to understand, within certain limits, French when it is spoken.

(*b*) He will be able to answer readily, with right use of tense and form, simple questions put to him in this tongue.

(*c*) He will be able to apply the essentials of accidence, and will have some notions of the syntax of the language.

(*d*) He will also be able to apply, in speech and in writing, a large number of words and idiomatic phrases which he has assimilated while "memorising" numerous anecdotes and poems.

Bacon's Large-print Atlas of the World. 9½ in. × 7½ in. 3*d.*; stiff boards, 4*d.*—A set of twenty maps, all political, except four relief maps inserted at the end of the book.

ENGLISH QUAKER SCHOOLS.

By A. G. LINNEY.

AT the present time there are about a dozen schools belonging to the Society of Friends in England. They may be arranged as follows:

Schools for Girls only.

The Mount School, York. Founded 1831. Belongs to the Quakers of Yorkshire. Eighty-five girls.

Schools for Boys only.

Bootham School, York. Founded 1823. Belongs to the Quakers of Yorkshire. Eighty-five boys.

Leighton Park School, Reading. Founded 1890. Belongs to a limited liability company, directly under the auspices of the central legislative body of the Quakers. Fifty boys.

Dual and Mixed Schools.

Ackworth School (near Pontefract). Founded 1779. Belongs to English Quakers as a body. Three hundred boys and girls.

Ayton School (near Middlesbrough). Founded 1841. Belongs to the Quakers of Durham and Northumberland. One hundred boys and girls.

Penketh School (near Warrington). Founded 1834. Belongs to the Quakers of Liverpool and Manchester district. Seventy boys and girls.

Rawdon School (near Leeds). Founded 1832. Belongs to the Quakers of Yorkshire. Seventy boys and girls.

Saffron Walden School (Essex). Founded (in London) 1702. Belongs to London Quakers. One hundred and sixty boys and girls. (This school was originally located in Clerkenwell, was transferred to Islington 1788, to Croydon 1823, to its present site 1879.)

Sibford School (near Banbury). Founded 1842. Belongs to the Quakers of Berkshire, Oxfordshire, and Bedfordshire. Seventy boys and girls.

Sidcot School (near Winscombe, Somerset). Founded 1808. Belongs to Quakers in the West of England. One hundred and forty boys and girls.

Wigton School (Cumberland). Founded 1815. Belongs to the Quakers of Cumberland. Fifty boys and girls.

A glance at the above list of Quaker boarding schools makes it at once apparent that one distinguishing feature of most of them is the presence of pupils of both sexes under one roof and under one headmaster. Perhaps the notion at the basis of this system is that by which the Society of Friends regards the members of its denomination as forming one large family in which there is the religious ideal of equality of the sexes.

Until comparatively recent times, Friends' schools furnished many of the disadvantages and few of the benefits of the system of co-education. Such experiments as were made in the direction of co-education before the modern discussions had emboldened educationists to give a side-by-side school life to boys and girls originated as much from motives of economy as from any other cause. The experience gained thus has frequently led to the adoption of co-education as a principle. Development in this direction has come mainly in the last ten years, and even now none of the Quaker schools ventures so far as,

say, such a school as Bedale's does. In this respect the extremes are marked by the schools at Sidcot and at Ackworth: at the former, boys and girls sit together at meals in places in no way dependent on sex, the various school societies have "mixed" committees, and a "scholars' representative council," for managing certain branches of school organisation, is chosen from girls and boys alike. At Ackworth, the number of pupils—180 boys and 120 girls—and the size of the buildings, involving, one may say, considerable journeys from one part to another, render it difficult to mingle the two sexes for class-work. Practically all lessons are separate, and chaperons still sit in lectures where girls are taught by the masters.

In the other schools (except Saffron Walden, which, like Ackworth, is "dual") the classes are, as a rule, composed of boys and girls together, so that the term "limited co-education," is one which describes the bulk of Friends' schools. Opinions as to the benefit of this are not unanimous, though on the whole favourable—and most so where the mingling is carried out to the fullest extent.

It cannot be said that the curricula which have been arrived at in the various Quaker schools have been greatly modified on account of "mixed" classes. The whole scheme demands a certain amount of elasticity, of course, and, to come to a concrete example of this, a class composed of boys and girls may be split up, one part taking instruction in woodwork while the girls are receiving a lesson in cookery or in domestic economy. I am informed that in some of the "mixed" schools a type of education is evolving which aims at meeting the needs of boys and girls who leave school at the age of fifteen. The aim is a practical one, and this makes it needful to separate boys and girls in their class-work for about one-third of the school term.

At Ackworth the highest form is "mixed," and the Matriculation examination of Victoria University is the object in view; at Sidcot the highest form works for the School Leaving examination of London University; at Saffron Walden, the Senior Cambridge Local examination.

But the fact that the school roof-tree shelters both boys and girls does have the effect of giving to the various Quaker schools a family life which cannot exist where brothers and sisters are entirely separated. The dual life, shared by the two "houses" or "wings," forms one whole in religious services, lectures, entertainments, certain excursions, and so forth. To a stranger, the sight of brothers and sisters walking together, reading home letters, or discussing the affairs of the joint school life, is undoubtedly a striking one. The more thoroughly and completely co-education is carried out in the schools, the more does there disappear that silly sentiment which sometimes existed in those schools where the two sexes moved within sight of one another, but with few or no chances of meeting. Where boys and girls are side by side in the class-room undergoing together the trials and momentary ridiculousnesses which come in school life, a healthy open feeling of comradeship grows up. It is only where the shadow of Miss Pinkerton still falls that there lingers any vestige of silly sentiment. One benefit of both the "dual" and "mixed" school system is seen in the gatherings of old pupils. Large and flourishing old scholars' associations exist in connection with most schools, the annual meetings usually taking place in the school term, either at Easter or at Whitsuntide. It must frankly be owned that one cause of their growing popularity is the opportunity of renewing the friendships and the budding romances of school days; such occasions are splendid object-lessons in the healthy and delightful comradeship of men and women.

Schemes of Study.—"A sound English education" is the officially expressed aim of most of the schools under consideration. Apart from the limits imposed by work for outside examinations, it may be said that English subjects receive most attention, and that, if anything, modern languages (or a modern language) and science are given more time than the classics. When comparing the Quaker secondary schools with others, one has to consider (*a*) the public school, (*b*) the grammar school, (*c*) the municipal secondary school. The broader curriculum and the lesser importance attached to the classics differentiate Quaker schools from (*a*) and (*b*), and the communal life and sense of corporate responsibility from (*c*).

Bootham and Leighton Park, keeping boys to a later age, furnish the nearest approach to the "public school" type, both sending a constant stream of boys on to Oxford and Cambridge. At Bootham there has recently been instituted a citizenship course for post-matriculation pupils. In this course, an introduction to the study of economics is made, and modern history is taught with special reference to existing political institutions and social problems. The theory of government is studied and its practical application is seen in connection with the City of York itself; thus, a lecture by a member of the City Education Committee is followed by visits to some of the municipal schools, and the housing problem is studied practically by visits to certain of the poorer districts of York. At Sidcot School, choral singing receives marked attention, and on several occasions weekly all the scholars and a number of the staff come together to work at whatever piece has been specially selected for study.

Leisure Hour Pursuits.—In Quaker schools these find a very prominent place in the life and activities of the pupils. All the schools possess workshops and natural history rooms which are in constant use; several have metal-turning lathes and nearly all set aside rooms for the use of photographers. On a fine holiday afternoon one will frequently find the boys widely scattered. In addition to those in the playing-field, there will be the older naturalists engaged on excursions

of their own devising and the younger ones very likely out with a master; there will be archæologists and photographers at work in or at the neighbouring churches, where several boys will be making brass-rubbings; the carpentry shop will be in use, and it is certain that many small boys will be engaged on their own garden plots. From this it is clear that there is a more *general* interest in leisure hour pursuits than is the case with the average secondary school. To an annual competition open to Friends' schools twenty-two observation diaries were sent in in 1907, and it must be remembered that these would be but the cream of a very much larger number which had actually been kept. In this competition the judges frequently have cause to commend highly the originality of the students, not only on account of the general standard attained, but also because of the ingenuity displayed in working at some special line which has attracted them. Among such diaries one finds sometimes novel methods of experimenting on such investigations as the protective colouring of insects, the effect of light on the growth of plants, and so on. Systematic meteorological observation by young pupils is a subject which I noticed recently at one of the schools was evoking great interest. Such pursuits as the collecting of postmarks or foreign stamps do not flourish vigorously, more intelligent hobbies of the nature I have indicated taking their place. In some cases the girls have separate natural history societies, though often the proceedings of these bodies take place in joint session.

It must not be assumed that the energy expended on leisure hour pursuits renders athletics and games weak and unpopular. Save as regards cricket, the standard attained in Friends' schools is fairly high, and the records of the athletic sports among boys are well up to those of the great public schools. The school games, with the occasional exception of "mixed hockey," are carried on separately.

School Buildings and Staff.—The last five years have seen many and striking extensions in the structure and fittings of the schools. One notable case is that of Bootham School, York, which in 1900 was partially burned down; from various sources the sum of twenty thousand pounds was raised, and important improvements and additions were made; the recent centenary celebrations of Sidcot School evoked a liberal response from its supporters; and in 1907 a Friend presented Ackworth with a new art school well fitted up. These are instances of the liberality with which members of the Quaker denomination support their educational establishments.

Wherever possible the governing bodies of the schools engage members of their own Church as teachers, and, until lately, many schools had several "apprentices," to whom a more or less careful training was given. This system has died a natural death, and, in its place, several schools have arranged to take student-teachers, whose work and training is definitely supervised. The Mount School, York, has a training department for women teachers, and this is a valuable asset to the Quaker schools. The "head" of each school is, of course, a Quaker; it would be idle to suggest that the fact of his having a joint staff to control always lessened his trials.

In Friends' schools there is no official recognition of corporal punishment, and it is very rarely used, and then only by the headmaster himself. No powers of chastisement are permitted to prefects. A fight is a very rare occurrence, and receives no official encouragement as a means of settling disputes: all official influence is towards the use of gentler methods rather than violence in any form. Public spirit is, if anything, slow to arouse, but when once stirred bears heavily on offenders. There is the legend through a long train of years showing Quakers as passive rather than violent opponents of any action or system which they do not approve. All these facts, to my thinking, contribute to render correct the opinion that is sometimes expressed by men acquainted with public schools as well as with Quaker schools—viz., that there is a less full-blooded atmosphere about the latter. It may be said that not one boy in ten thousand educated at Quaker schools ever enters either Navy or Army; it is of rare occurrence for a boy to go into such employments as the Indian Civil Service or the Forestry Department of the Indian Government. Many of the pupils go into business or engineering employments, though the professions do absorb some proportion. I am of opinion that ambition is a quality which is not so strongly developed among youths leaving Quaker schools as with young men leaving English public schools. The training of the schools of Friends produces thoughtful citizens rather than ambitious men and dreamers or creators of Empire.

Ten years after he leaves the thrall of the dominie the public-school boy may be controlling a department as big as an English county, or he may be in command of a torpedo-destroyer. The same lapse of time finds the Quaker scholar serving on his town council or actively concerned in some field of social service in that part of the community where he is living.

The writer has not made any reference to the religious aims or training of the Quaker schools, inasmuch as this hardly seems the place in which to do so. It must, of course, be understood that the highest importance is attached to development of the religious life of the pupils, and that all moral training has its foundation in religion.

Drawing for Tinies. By A. Swabey. 42 pp.; illustrated. (Charles and Dible.) 1s. 6d. net.—Written with a keen and sympathetic insight into child nature, this little book forms a valuable contribution to the kindergarten library. The sketches are full of suggestion as to the things which little five-year-olds love to draw and of the way they love to draw them, whilst the letterpress gives a capital idea of the spirit which should pervade lessons of this character.

TIME-CHARTS: THEIR USE IN THE TEACHING OF HISTORY.

By F. J. C. Hearnshaw, M.A., LL.D.
Professor of History in the Hartley University College, Southampton.

MOST teachers of history, particularly those whose duty it is to instruct younger children, find it a task of all but insuperable difficulty to awaken in the minds of their pupils an adequate conception of time-relations. It is hard, to begin with, to get the youthful imagination to realise at all what lapse of time means. The childish memory is limited by the experiences of a few dozen months; all that happened in anterior ages happened vaguely "once upon a time"; no idea of the symmetrical, definite, far-extending centuries presents itself. Then, secondly, even when the historic sense has been aroused, and when events have begun to range themselves in ordered rank along the track of thought, it still continues to demand an effort greater than a child can make to gain the true historic perspective and to see the more distant eras in their veritable proportions as compared with those that are nearer.

The very text-books in use, through no fault of their own, make the task the more onerous. I take up the first that comes to hand. It is a book of more than 350 pages. Of these, exactly two are devoted to a description of the Roman conquest and occupation (B.C. 55–A.D. 410), while the Hanoverian era (A.D. 1714–1901) is treated in 110. It is not easy even for a mature intelligence fully to grasp the fact that the period of the two pages was more than twice as long as the period of the 110.

Thirdly, there is another difficulty which presents itself later, when the scope of historical reading is being widened, and the stories of English history are being supplemented by the stories of the annals of the larger world. There is danger lest Theodoric, Mahomet, Haroun-al-Raschid, Charlemagne, the Cid, Henry the Navigator, Columbus, John Sobieski, Kosciusko, and the rest of the heroic band, as they in turn enter the historic stage, should fail to establish relations with their notable English contemporaries already there. It is not everyone, for instance, even among the adult readers of "The Arabian Nights," who, if he were asked to which of the English kings the great noctivagrant Caliph might have sent an embassy, would be able to say that it would have been to Offa of Mercia or to Egbert of Wessex.

These three distinct difficulties relating to the conception of time have their analogies in the kindred subject of geography in respect to space. It requires some pains to get a child to realise the vastness of the world, to say nothing of the immensities of the universe, which, indeed, are such as to baffle all human imagination. It is not easy to impress upon the patriotic mind of a schoolboy the smallness of England as compared with, say, Russia or the United States. There is possibly some danger lest physical, political, and commercial geographies should remain unrelated to one another in the scheme of study. But in the case of geography it is a comparatively simple matter to overcome these difficulties, owing to the potent assistance given to the written word of the text-book, or the spoken word of the teacher, by the agency of maps. The eye is called in to help the feeble imagination and the struggling reason, and by means of the eye the entrance and the victory of the new idea are achieved.

The immense value of maps in geography—the indispensable aid which they give to the realisation of conceptions of space—makes one ask: Is it not possible graphically to represent process of time in a manner analogous to that in which we habitually represent extension of space? Can we not enlist the aid of the eye—the earliest developed, the quickest, the surest, the most mature of all the organs—in our effort to impart the rudimentary conceptions of chronology? Can we not do for the dates of history what we have already done for the names of geography? Can we not find for them some sort of a "local habitation"; fit them pictorially into the scheme of things; show visibly their relation one to another? The familiar chronological summaries and synoptical tables, useful as they are as works of reference for advanced students, admittedly do not do this. What is wanted is some sort of chronological chart or historical map, if it is possible to construct such a thing.

This want is strongly emphasised in the important "Memorandum on the Study of History" recently issued by the Scottish Education Department.[1]

> The first requisite (we are told) is to establish some sense of the time relation that subsists between the considerable number of facts with which the child has already become familiar in an unsystematic way. This at once raises what is possibly the most severe problem involved in the school study of history. No one who is in close touch with school work . . . can have failed to notice how imperfect is the time-sense of children, and how strong is the tendency, in the absence of very careful teaching, to regard events that really occurred in different centuries as practically contemporaneous. . . . What is needed is that the time relations should receive a vivid and enduring representation in *space*. . . . The child should have continually before him a space representation of the whole period of history that he is to be concerned with.

The want, then, is admitted. To admit a want, however, is one thing; to supply it is quite another. It is not so simple a thing to make a time-chart as it is to make a geographical map. In a geographical map, space is represented by space, the concrete by the concrete, the visible and tangible earth by a visible and tangible facsimile thereof. If a map were constructed on the scale of an inch to an inch, it could be made to serve as a covering or dust-sheet to the country which it depicts, exactly coinciding with its surface.

[1] Cd. 3843. (London: Wyman and Sons.) 1½d.

In trying, however, to represent *time* by means of space, we are working in an alien medium; we are transmuting the abstract into the concrete; we are giving corporeal form to a mental conception; we are leaving the realm of realities for the realm of symbols, and are abandoning pictorial art for pedagogic artifice. There is nothing more than analogy between duration of time and extent of space, between the centuries of history and the inches of a sheet of paper. The analogy is, however, sufficiently intimate to serve as the basis of some very useful devices, to which the name "time-charts," or "historical maps," is usually given. Since, however, the form of these charts or maps is not fixed by nature, but is left to be determined by human craft, there is, as experience abundantly proves, a tendency to make them too ingenious and complex, and to load them with an excessive burden of significance. The besetting temptation of inventors is inventiveness, and the designers of time-charts are rarely content to represent time alone; they try to depict, by a clever use of colours and arrows and sprouting shrubs and hands and stars and flowing streams, such things as cause and effect, union and disruption, migration and conquest, "the co-ordination of events in groups or categories," and "the arrangement of these categories according to their degree of subordination, or their admitted importance." The result ensues that they defeat the very purpose for which their work is designed. They produce a puzzle, and not an aid to memory; they baffle the reason rather than assist the imagination.

I have before me as I write an old-time "synchronological chart of universal history, measuring 17½ *feet* in length and 2 in. in width, and printed in twelve colours in the highest style of chromo-lithographic art." It is perfectly appalling in its complexity. Those who have not seen it can form no conception of it, unless they can picture to themselves the Bayeux Tapestry gone mad. The "key, or plan," given in seven languages, is a study in itself; it explains the significance on the chart of (*a*) the long black wavy line, (*b*) the upright black pillars, (*c*) the large black figures *above* the century posts, (*d*) the large black figures *below* the century posts, (*e*) the thin black perpendicular lines passing through the century posts, (*f*) the long, thin, red lines running parallel to the black thin lines just mentioned, (*g*) the small black figures on each red line, (*h*) the coloured streams of varying widths, (*i*) the large red crosses, (*k*) the small red crosses, (*l*) the red circles, (*m*) the illustrations, (*n*) the tablets, (*o*) the notes of interrogation; finally, it concludes with: "the mass of letterpress interspersed among the various streams and illustrations on the chart needs no explanation." But by the time we reach this welcome announcement we are too much exhausted and bewildered to feel adequately grateful. The whole thing is a marvel of misguided ingenuity and misdirected energy; if it had contained but one-tenth the information which is to be found in its manifold convolutions, it would have been ten times more useful. I cannot conceive that anyone save its inventor ever learned any history from it.

None of the more recently published time-charts fall so hopelessly into the snare of complexity as does this old one. The simplest and best that I know is the "A.L. Historical Sequence Chart," issued by Messrs. E. J. Arnold and Son, of Leeds. This chart consists of four separate sheets which together cover the whole of English history from 1066 to 1901. It is divided vertically into bands proportionate to the durations of the successive reigns. Horizontal cross-divisions indicate the leading statesmen, the prominent writers, the chief constitutional events, the wars, the treaties, and so on. Yet even this comparatively simple and lucid chart contains one remarkable and regrettable effort of ingenuity. It seeks to portray the moral characters of the kings by means of various bright colours! Thus *blue* indicates "very good, wise, useful, strong, bold"; *red* signifies "faithless, cruel"; *green* marks a king as "imprudent," *yellow* as "incapable, weak, unpopular," *purple* as "good, learned, cautious," *brown* as "indifferent." Is it credible! Would even the pure and unmixed characters of Dickens's novels lend themselves to such crude classification? What, then, of the English monarchs? William III., for instance, was "useful," he was "cautious," he was also "unpopular." Should he be blue, or purple, or yellow? And what of that enigma of kings, Henry VII.? Surely nothing short of the rainbow could adequately represent his qualities. In the chart both are *blue*, as also are William I., Richard I. (!), Edward I., Edward III., Henry V., Elizabeth, George I., and Victoria. Such a list is self-condemnatory. What serviceable lesson can it teach the infant mind? Its best use perhaps would be to act as an awful warning against immature judgment and hasty generalisation.

Another recent time-chart is published in the form of an atlas. It is entitled "History Maps," prepared by Messrs. Pringle and Morris, and published by Messrs. W. and J. George, of Birmingham. These maps also suffer from overfulness and overelaboration. A vertical column is assigned to every *year*; one map comprises fifty years only. Thus seventeen maps are required to cover the brief span of time from the Norman Conquest to the present day. Then, again, there are no fewer than eleven horizontal bands, indicating as many different departments of history. Hence every century is represented by no fewer than 1,100 vari-coloured squares, and, though very many of them, happily, are blank, their mere number is overwhelming. The "maps" cease to appeal to the eye, and become nothing more than curiously arranged chronological tables.

When ingenuity has said its last word, we turn with a feeling of relief and satisfaction to the simple "Line of Time" described and depicted by the late Prof. H. L. Withers in his admirable

chapter on the teaching of history in Barnett's "Teaching and Organisation."[1] Here are no elaborate devices; here are no attempts to represent anything except time-relations; here are simplicity, intelligibility, and unqualified utility. There is nothing but a single, central, vertical line, marked off into sections, each representing a decade. Along this line are placed, each in its proper place, the notable events of history. Each pupil builds up his own "line of time," and this is one of the chief advantages of the "line of time" over ready-made charts and maps.

As the Scottish Commissioners say, "For teaching purposes it is essential that this chart should *not* be ready-made, but should be built up leisurely and by slow degrees, as the study of the subject progresses." The first date which is marked on the line is that of the pupil's own birth; the minute fragment of the line between that point and the end of the line serves as a standard of comparison by means of which the duration of past epochs can be measured.

As Prof. Withers says:

A number of important advantages will flow from the use of some such line of time as compared with that of an ordinary date card. The comparative length of modern, mediæval, and ancient history will be seen at a glance. Dates will no longer be isolated, but—as they ought to be—connected points in a continuous series. A little practice will enable a pupil to visualise a date on the line of time as surely as he can a longitude on the map of the world. And just as a teacher of geography makes a habit of referring a sectional map to the larger one of which it is a part, so will the teacher of history begin the study of any particular period by locating it on the line of universal history, and ascertaining that his pupils know where they are before they enter upon detailed study.

Here, then, we have at once the simplest, the least expensive, and the most effective of time-charts.

EXPERIMENTAL PSYCHOLOGY AND EDUCATION.

By J. A. Green, M.A.
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II.

THE investigations which were described briefly in the previous article[2] dealt with observation. When the results of observation are recorded it is possible to estimate the trustworthiness of the observer under varying and in part controllable conditions. The subjective condition of the observer is, of course, outside the exact control of the investigator. He must therefore avoid times and seasons during which the subject himself declares his unfitness—a headache, excessive preoccupation, bodily discomfort of any kind will produce results that do not represent the stable individual. It is obvious that the only person who can judge of subjective fitness is the subject himself, and when working with adults account is taken of general condition as it is described by each one. In the case of children the inner factor is probably less disturbing. The child is, however, more easily fatigued, and therefore experiments made at different times of the day will cause greater variation in results than similar changes would with the normal adult.

It is not possible here to describe in detail the precautions and refinements taken by the various researchers. Those who are interested will find them in the memoirs themselves. The immediate purpose of these papers is to indicate very briefly some of the lines of inquiry which the new psychology is pursuing, often under the inspiration that comes from a strong sense of uncertainty in regard to the presuppositions which lie at the back of class-room procedure. After the apparatus and technique of the "observation lesson," probably there is no subject more closely concerned with teaching practice than that of

Memory.

Can memory be trained? is a stock examination puzzle, and most people assume that childhood is the memory period *par excellence*. Both are surely questions which observation and experiment can answer. In discussing the subject, we not uncommonly overlook the fact that memory involves acquisition as well as retention, though we do sometimes make the distinction in conversation. What easily comes, easily goes. Is it a fact that learning quickly and forgetting easily are always found together? The point to be clear about is that two lines of inquiry are necessary before any pronouncement can be made in regard to either of the questions raised above, and *a priori* views about the "dogma of formal training" must not be allowed to take the place of exact experimental inquiry.

In the course of a research into the intellectual development of school children in St. Petersburg, Dr. Netschajeff investigated the development of memory. His particular object was to find out whether the various "kinds" of memory develop simultaneously and in the same way in both sexes. He did not confine himself to memory as it is most exercised in schools—memory for words and figures—but also included memory for unarticulated noises, &c. He examined 687 children from six different types of schools, varying in age from nine to eighteen. Each experiment was conducted with a whole class. After the children had received a series of visual or other impressions the order to write was given. Straightway they wrote down all they could remember. Each impression followed five seconds after its predecessor. Thus, in the first series, twelve common objects (a newspaper, a soldier's cap, a glass, a book, &c.) were silently held up before them; in the second, twelve familiar noises (the clang of glasses, a knock on wood, on a tambourine, &c.) were made behind a screen, twelve two-figure numbers followed, then sets of twelve three-syllable words relating respectively to visible things, things

[1] Longmans, Green and Co., 1897.
[2] March, 1909, p. 81.

heard, things "felt" (cold, smooth, &c.), emotional states (hope, sorrow, &c.), and, finally, to abstract notions (cause, effect, &c.).

His results showed general increase in power with advancing age, and the great influence which the meaning of the words employed had upon the memory. Thus, the memory for figures and for abstract words remained very low all through the primary-school period, and, indeed, was conspicuously lower than that for objects and that for names of familiar visual objects all through the higher schools. He found, further, that development seemed more or less at a standstill from fourteen to fifteen, that girls' memory for words of all types was better than boys, though they were conspicuously behind the boys in memory for actual impressions, and the boys surpassed them in respect of words denoting abstract ideas when they reached the upper half of the high schools.[1]

It should be said, however, that the number of girls examined was relatively small. In this particular, and in some other details of procedure, Herr Lobsien, of Kiel, improved upon the Russian investigation.[2] He confined his inquiry to elementary-school children, and examined an approximately equal number of boys and girls—402 in all. Nevertheless, his results were on the whole corroborative of those obtained in St. Petersburg.

It has been objected that these and similar investigations do not touch bottom, so to speak, because the tests introduce the complexities of meaning into the impressions. The different classes of words and the individual words within the several classes are remembered by virtue of their associations, and the primary qualities of memory—*i.e.*, of receiving and retaining isolated, meaningless impressions—are not revealed. The use of neutral words, numbers, or nonsense syllables is, therefore, preferred. Further, as Prof. Meumann pointed out, the use of the same number of syllables for the fourteen-year-old and the nine-year-old prevents the possibility of arriving at an idea of the maximum powers of the younger children. He improved the method of starting in each case with a small number of words, increasing the number one by one until the maximum was passed. He extended the inquiry to adults, and found that what he calls the "primary" memory of children is far below that of adults, that it develops very slowly in the elementary school, takes a sharp turn upwards just after the ordinary leaving age, and reaches its maximum in early manhood—between twenty-two and twenty-five—from which time onward it remains fairly constant, at any rate until middle life. Here one should note that the persons concerned belonged to the professional student class.

Whether or not advance in "primary" memory power is parallel with age or with growing intelligence is a disputed point. Meumann found that the more intelligent children always did better than the less intelligent—intelligence being judged from the position held by the child in the class. The *Société libre de psychologie de l'enfant* of Paris has arrived at the same conclusion. Bolton and other psychologists regard it as much more a matter of age. Netschajeff tested a number of his children with the spirometer and dynamometer, and found that those with good memories were invariably better developed physically than those with weak ones. It should be added that the procedure described has been objected to by Binet and others, in that it is the child's power of attention and not his memory that is being measured. The only test of memory which Binet admits is retentiveness. "*L'enfant a plus de mémoire, l'adulte plus d'attention.*"

This brings us to a question in which the practical teacher is likely to be more interested—that of memory tenacity. Much ingenuity and labour have been spent in the effort to find a means of measuring individual differences in this regard. The first difficulty comes from the material to be used as a test. What is one man's meat is another man's poison. Some absolutely neutral material must be found—one that makes no special appeal to anybody. Further, this material must be equally difficult in all its parts. A poem varies from stanza to stanza—the number of words is not constant, rhyme, metre, &c., change and make the estimation of relative difficulty impossible.

To overcome these difficulties Prof. Ebbinghaus invented the method of using nonsense syllables. Rows of ten, twelve, fourteen, &c., of such syllables, each made up of two consonants and a vowel, constitute the tests. The number of repetitions necessary before a row of given length can be repeated unhesitatingly and without mistake gives a measure of acquisitive power. Fourteen syllables will make a bigger demand than twelve, though the same could not always be said in comparing two sentences. Some actual results will be interesting as bringing out differences in individuals, and showing the improvement effected by practice. For a row of twelve syllables A required 56 repetitions, B 18, C 26, and D 30 when they first made the attempt. After some months' practice A could accomplish his task in 19 repetitions, B in 8, and after five weeks' practice C could learn twelve nonsense syllables in 8 repetitions and D in 12.

The same methods offer a convenient means of measuring the rate of forgetting with lapse of time. Even twenty-four hours after a series has been perfectly acquired unhesitating repetition is not usually possible. But the series is caught up again very easily—one or two repetitions suffice where previously ten or twelve were necessary. After an interval of months some trace still remains. It is shown by the smaller number of repetitions essential to fresh mastery. Here, then, is a means of comparing the memory tenacity of two persons. If A originally expended 20 repetitions in the acquisition of a series, and after a month's interval finds that 12

[1] See "Exp. Unters. üb. Gedächtnisentwickelung bei Schulkindern." Netschajeff. *Zeitschrift für Psych. und Phys. der Sinnesorgane*, Band 24.
[2] For details see vol. xxvii. of the same journal.

repetitions suffice for its re-acquisition, the fraction $\frac{12}{20}$ will express his loss and $\frac{8}{20}$ that which lapse of time has failed to destroy. B, on the other hand, required originally 30 repetitions, and after a month needs 15. Though he must still repeat the series oftener than A, he has lost, relatively to his original effort, less than A.

Applying this Ebbinghaus method to school children, Meumann has approached the problem of the supposed superiority of children in the matter of mechanical memory. It is not uncommonly said that the older one grows the less well one remembers. So far as mere acquisition is concerned, exact experiment proves the contrary to be the fact. "Even at forty-six the adult proved better than school children at their best." Children need more repetitions and more time to take hold of series of this kind—and this in spite of the fact that the adult has lost the art of learning by heart what he does not understand. But the reverse comes out when the tenacity of the child's memory is compared with that of the adult. Primary-school children retain much better than grown-ups. This primary memory-toughness seems to diminish steadily with age even in school. The younger children take more time to acquire, but after a given interval of time they reproduce more exactly than the older ones. So far as the Zürich experiments go, this curious contrary line of development is observable all through the primary school—that is, from seven to fourteen—increasing powers of acquisition, decreasing powers of retention.

It is noteworthy that all psychological work with the memory brings out the great improvements effected by practice. This is true even when the persons concerned are in middle life, and when the natural tendency to decline of power sets in much may be done by practice to maintain it. "The maximum of efficiency for each mental function seems to be reached at specific ages. For memory, looking to the results of experimental inquiry, I am inclined," writes Dr. Meumann, "to place it approximately in the twenty-fifth year. Regress sets in very slowly, and the more we exercise the memory the more slowly it deteriorates. . . . All mental and organic development follows the same course. A long, slow, but steady period of decline following a more rapid ascent. Practice, exercise, is the only means of withstanding this tendency alike in the activities of body and mind. . . . How important, then, it is that an energetic interest in the formal exercise of our faculties should be awakened early and that educational interests should be directed to the formal side."

Prof. Meumann does not, however, go so far as the Belgian psychologist, Van Biervliet, who would make formal exercises in memorising, in sensory perception, in observation, &c.; such as the psychologist invents for his laboratory, part of the regular practice of the school. Even if we grant the general contention, there is surely, as Meumann points out, sufficient material in the actual curriculum itself for formal exercises if it were made use of to that end. We need not invent nonsense syllables for memory training. And, by the way, it should be pointed out that improvement under training does not appear to affect retentiveness. It is rather in acquisitive power that advance is made. Thus whilst children learned two or three times as quickly after they had practised a little every day for some time, it was not found that they retained any longer that which they had learned.

The fact that the acquisitive powers of the memory are just entering upon their period of maximum development at the time when the children are leaving the primary school is a strong psychological argument in favour of the general extension of school life to the fifteenth year. May not many of the complaints of the ineffectiveness of the schools find their explanation here? One may note in passing that complaints such as we are familiar with in this country are current also in Germany, where compulsory military service affords an excellent opportunity for testing the permanence of school instruction.

Of course, we shall hear at this point the objection that whilst it may be true that formal memory training will give additional power in acquiring a particular kind of material, there will be no increment to the acquisitive power of memory in general. But a long and painstaking research conducted in the Zürich laboratory leads to a contrary conclusion. "The objective results of our inquiry show that specific memory training produces a general increase of power." The actual practice in this case was done with meaningless syllables.[1]

The actual technique of learning by heart has been the subject of an interesting monograph by Prof. Meumann,[2] in the course of which he attacked the problem which every teacher has often to meet, viz., that of the best way of committing to memory a piece of poetry or prose, best both for ease of acquisition and for relative permanence of result. Is it better, for example, to divide the piece into small sections and learn it section by section, or to tackle the whole piece at once? Steffens, under the guidance of Müller, in Göttingen, had already come to the conclusion after careful investigation that the latter method had the advantage. He had, however, worked chiefly with adults. In order to find out the normal method of setting to work, he asked seven adults and two children to learn by heart a nine-line stanza for each of several days in succession. The piece was laid before them on the desk, and they were allowed to read it as they liked—they were to learn it by heart as best they could. But each time they read a line or a number of lines they were to mark the text at the side, indicating each time how much they had read. Steffens was thus able to follow out the procedure of each individual. He found that all of them divided the

[1] See "Über einige Grundfragen der Psychologie der Übungsphänomene in Bereiche des Gedächtnisses," von Ebert u. Meumann, p. 636. (Leipzig, 1904.)

[2] "Über Ökonomie u. Technik des Lernens," von Dr. E. Meumann. Die Deutsche Schule, 1903.

piece into sections; all of them repeated the first part much oftener than the later parts, because when they had learned it and were busy with the next bit, they often went back to the beginning to avoid forgetting and to link the sections together. The end of one section and the beginning of the next were often repeated over and over to make fast the connection. Difficult bits were said more frequently than the rest. Grown-ups learned more by trying to say by heart what they half knew, glancing at the text when they were stuck; the two children, on the other hand, seemed simply to read, though in a very unsystematic way.

It is obvious that all these partial repetitions set up obstacles that had to be broken down later. "Learning by heart" depends ultimately upon the establishment of a series of muscular movements exactly comparable to those acquired by the musician who masters a nocturne or a sonata. Why then do we as a rule proceed in an unpsychological fashion? There is, of course, the temptation to give special attention to the difficult places, with the result that a breakdown takes place elsewhere, and there is our natural laziness. We like to see the results of our work, finding therein the stimulus to go on.

Meumann set himself three questions to answer: (1) In which way do children learn by heart most quickly and perfectly? (2) Which method is most favourable to the distribution of attention over the matter in hand and to the formation of associations? (3) Which method leads to longest retention? Two girls and three boys of 8, 10, 11, 12, and 14 were most carefully tested. The general result will have been anticipated already. Always provided that the piece was not so long as to frighten the child, or to weary him in his attempt to grasp it, the method of reading it right through each time proved both quickest and most lasting. Nothing disables a child more than the feeling that he is in the presence of a task that is too much for him. The grown-up may fight that down. The child cannot. The teacher must decide where this limit lies, and within it, if he would make memorising effective and at the same time train the child in the economy and technique of the process, he will not neglect the lesson which has come from the psychological laboratory at Zürich.

Germany in Story and Song. Edited by R. Wake and E. Brechtel. 226 pp. (Blackie.) 2s. net.—The text of this reader is carefully compiled from many sources, verse being represented as well as prose. As in Dr. Wichmann's reader, "Am Rhein," a good deal of space is devoted to the Rhine country and to the legend of Siegfried. The German questions on the text and the grammatical exercises are satisfactory, though perhaps hardly full enough. There are good biographical notes on Schiller, Uhland, Heine, and Goethe, and six pages of notes on the text, which mainly consist of English renderings; the notes on the subject-matter are rather scanty. The vocabulary is not complete. For the sake of reform teachers, it might be well to issue an edition without the notes and vocabulary. There are some good full-page illustrations.

THE TEACHING OF ALGEBRA.

By P. B. Ballard, M.A.

II.—Defects and Remedies.

In the preceding article I tried to point out that the main weakness of the older text-books on algebra consisted in the failure to develop the subject logically out of arithmetic, and that this weakness was reflected strongly in the teaching of the subject. In this article I shall try to show that even the latest text-books, although they indicate a very marked advance, leave something to be desired in the way of grafting the algebra on the arithmetic. I have not yet seen a text-book in which any attempt is made to utilise the beginner's knowledge of our denary system of notation as a basis for explaining an algebraic expression. It is true that after the pupil has had considerable practice in dealing with multinomials, it is shown (generally in a late chapter headed "Scales of Notation") that our denary system is a special case of a more general system; but this surely is, from a teaching point of view, putting the cart before the horse.

The real significance of an algebraic expression is, I venture to think, seldom or never grasped by the young beginner. Why, for instance, should we ever trouble to express a number in the form $a+b+c$? The number is simple: why should not the symbol be simple too? This is by no means a frivolous question, nor yet a question unlikely to arise in the mind of the pupil. In the mind of the *intelligent* pupil it must inevitably arise. What need is there for a complicated expression like ax^3-bx^2+cx-d? In what conceivable circumstances should we want to multiply this expression by another expression equally complicated? The numbers with which we deal in ordinary life possess no such complexity. All whole numbers, whatever their magnitude, are in a sense equally simple. Each occupies a definite position in the natural number series, 1, 2, 3, 4, 5, &c. Whatever opinion we may hold with regard to the origin of our number concepts, we must admit that this series forms the logical basis of all our operations with number. Every number in that series has its own position and its own magnitude. It is in a very real sense *sui generis*. Its place cannot be occupied by any other number, nor yet by the sum or product of any other numbers. It is absolutely unique.

The captain of a sailing vessel, when going on a long voyage, took out with him a medicine-chest containing remedies numbered from 1 to 20, with a corresponding handbook of diseases indicating the appropriate remedy by number. Remedy No. 9 was soon exhausted, and when the next case of illness called for this particular nostrum the skipper found himself in a difficulty. But a brilliant idea struck him. He mixed together No. 4 and No. 5. The absurdity of this procedure is obvious; the absurdity of saying that 9 in the number scale is quite adequately represented by $4+5$ is not so obvious. What we precisely mean by saying that $4+5=9$ is that in going up the

number series, if, when we arrive at 4, we take as many additional steps as we should have to take to get from the beginning to 5, we shall arrive at 9.

The philosophical reader will remember that Kant deals with this very point in the introduction to his "Critique of Pure Reason." He shows that $7+5=12$ is not a mere "analytical proposition" like $a=a$, but a "synthetical proposition" involving fuller content in the predicate than can be discovered by an examination of the subject. In fact, they are not absolute identities. What I have said of the uniqueness of small numbers is equally true of large numbers: they are merely higher up the series. It is true that small numbers up to 9 are represented by simple arithmetical symbols, while the higher numbers are represented by two or more symbols placed side by side. But the complexity of the symbol is not an essential feature, and in no way affects the simplicity of the number.

Regarded objectively, therefore, there is no essential difference in complexity between a small number like 7 and a large number like 8,263. There seems no reason, then, why each may not be equally well represented by a monomial algebraic expression such as a, b, or x, and no reason appears for adopting a multinomial form such as ax^3+bx^2+cx+d for the second.

It is only when we come to look at number from the subjective point of view that the real reason for a complex symbolism emerges. Our concept of a small number like five (I am referring, of course, to the psychological and not the logical concept) is simple: it can be imaged in the mind by five dots, five strokes, five fingers, five taps with a stick, or five notes of music; or it may be conceived as occupying a definite position in the series 1, 2, 3, &c. In any case, it can be clearly apprehended by the mind as a single thing. The five dots form a picture easily recognisable without conscious analysis. Of the number 376, however, the mind can form no such simple concept. It cannot image the number either visually or aurally; and the only notion it can form of its position in the number series is a very vague one: it is merely conceived as rather high up in the series.

In order to form a serviceable concept of large numbers, we have, in fact, to group them in our minds in accordance with some fixed system. The first group unit in the system in use among civilised races is 10, the second 10^2, the third 10^3, &c. In ascending the number series the termini of the various groups serve as landmarks. It is difficult for us, who were born into a world that had used this system for so many ages that it had come to look upon it as a part of the very nature of things rather than a conventional artifice, to conceive the amount of ingenuity displayed by our remote ancestors in elaborating such a system. The radix 10 was unquestionably chosen because we had 10 fingers on our hands. We find a quinary system of notation, based, no doubt, upon the number of fingers on one hand, in use among the Eskimo, the North American Indians, and some of the tribes of Equatorial Africa. The Welsh seem to have wavered in the selection of a numerical radix. They have 10 as their first landmark, a subsidiary landmark at 15, and a more stable one at 20. Then the series proceeds by scores up to a hundred. The trace of a vicenary system (where toes come in as well as fingers) is to be found in the Anglo-Saxon use of the word score, as in "three score and ten," and in the French numeral "quatre-vingts." It will thus be seen that we cannot think of high numbers except as the products and sum of simple numbers: we cannot think of 376 except as $3\times10^2+7\times10+6$, or some similar aggregation of groups.

Apart from the psychological limitation we have just discussed, the difficulty of finding a single symbol and a single name for each number is insurmountable, since the series is infinite. The thing is not feasible; nor would it be desirable even if it were feasible, for the concept, the name, and the symbol should have some sort of correspondence. A conventional and arbitrary connection having been established between the numbers, names, and symbols comprised in the first group unit, the correspondence for the higher numbers can no longer be arbitrary. The name five and the symbol 5 were chosen to represent the concept of that number for no irresistible reason inherent in the eternal fitness of things. But this convention once established, there was no option in selecting some such symbolism and nomenclature as 5,555, five thousand five hundred and fifty-five.

Bearing in mind these facts, the reader will, I think, agree with me that a thorough examination of our system of notation and of other possible ones is an essential propædeutic to the study of algebra. I contend that a child cannot otherwise attach any practical significance to an ordinary algebraic expression. We cannot understand completely anything until we have had some experience of its opposite. Have we not all marvelled at the fact that two and a half centuries ago the world knew nothing of the law of gravitation? If the pull of the earth differed perceptively at different points of its surface, or if in some parts it was absent altogether, the earliest thinkers would have attempted to formulate the law. But the very constancy and ubiquity of its operation served as a bar to its discovery. The most familiar things are the things we least think about. The child who has for years made practical use of the denary system of notation comes to take the whole thing for granted; he regards it as the only possible system, and seldom tries to understand its structure. It may be contended that in the modern infants' school a sound, fundamental knowledge of the system is given, but experience shows that an average boy of twelve has a very imperfect conception of place value, and would be extremely puzzled if asked to write down 4,004 in figures without using the noughts.

Lessons given at this early stage on scales of notation should not aim at the conversion of

numbers from one scale to another, but merely at enabling the pupils to see that a systematic expression of numbers generally takes the form $a+bx+cx^2+dx^3$, &c., written in descending order.

In the common scale of notation $328=3x^2+2x+8$, $4{,}026=4x^3+2x+6$, where the radix or group unit is 10.

$$37{\cdot}625 \text{ metres} = 3x+7+\frac{6}{x}+\frac{2}{x^2}+\frac{5}{x^3} \text{ or } 3x^4+7x^3+6x^2+2x+5,$$

according as we take a metre or a millimetre as our unit. 5 hrs. 26 min. 14 sec. $=5x^2+26x+14$, where the unit is 1 sec. and the radix 60. These are examples of what may be called systematised numbers. As examples of unsystematised numbers I may instance £4 17*s.* 6½*d.*, which equals $4a+17b+6c+2$, where the unit is a farthing, and $c=4$, $b=12c$ or 48, and $a=20b$ or 960; or 8 yds. 2 ft. 7 in., which equals $8x+2y+7$, where the unit is an inch, $y=12$, and $x=3y$ or 36. It can thus be shown by examples from ordinary arithmetic that both types of algebraic expressions, the systematised and the unsystematised, have a sound foundation in actual commercial and scientific needs, and were not arbitrarily invented with the sinister intention of making the subject more difficult for small boys.

It is the business of algebra to make the science of number as complete as possible by extending the notions derived from the study of arithmetic. The pupil will accordingly have to deal not merely with positive integral and fractional numbers, but also with negative, irrational, and unreal; not only with a simple decimal radix, but with a general radix of various degrees of complexity. Thus, while the number 59 can be represented by either $5x+9$ or $6x-1$, where x is 10, it can be represented by $2x^3+x+2$, or by $2x^3+2x-1$, or by x^4-2x^2-x-1, &c., when $x=3$. The concept of systematic grouping may further be extended to include expressions with a double radix, such as $6x^4+7x^3y+3x^2y^2+4xy^3+y^4$.

It may be noted that it is only in the case of those expressions which I have called systematised that the term coefficient has any significance. Which, for instance, are the coefficients in the expression $ab+cd+ef$? In comparing this with the expressions given above as equivalent to a sum of money and a given length, it seems as though one of each pair of factors represents some fixed denomination. There is nothing, however, in the expression itself to indicate that this is the case. The difficulty is still more obvious in the expression $abc+def+ghk$. As a matter of fact, the term coefficient is extremely useful, but it is only useful in dealing with a certain class of expressions.

A certain marked dissimilarity between arithmetical and algebraic convention should be made clear. When no operative sign is placed between figures addition is indicated; when no sign is placed between letters multiplication is meant. Thus $3{,}724\frac{2}{3}$ means $3{,}000+700+20+4+\frac{2}{3}$; but $abcd$ means $a\times b\times c\times d$. This dissimilarity tends to obscure the essential correspondence between the expression of particular numbers in arithmetic and the expression of general numbers in algebra.

The bulk of modern reformers favour Comte's view of algebra as a "Calculus of Functions," and regard the fixing of the idea of function as one of the first steps in the scientific teaching of algebra. The expression x^2+3x+2 is considered as a function of x. Its value varies according as the value of x varies. To find that special value of the variable which makes the value of the function zero is to solve an equation. Although it leaves out of account the unsystematised type of expression, this is admittedly a very profitable way of regarding the ordinary algebraic expression. It lends itself readily to graphic illustration, and leads up to a fruitful theory of equations. But although it in no way conflicts with the view of algebra advocated in this article, it is not, I contend, the best way for a beginner to approach the subject. If the important point were to correlate algebra with geometry, much might be said for laying early stress upon this particular aspect. But the essential thing is to correlate it with arithmetic, or rather to fuse it with arithmetic, for the relationship is too close to be regarded as mere correlation. Apart from the fact that its kinship with arithmetic is more intimate than with geometry, the pupil knows something about arithmetic, but probably knows nothing about geometry. There is no doubt whatever in my mind that the only satisfactory way of treating algebra in the schools is as generalised arithmetic. I am quite prepared to admit that it is something more than generalised arithmetic; but it is that at least, and that first of all. Arithmetic is the soil from which it grows, and if it is to form in the pupil's mind a healthy system of knowledge the teacher must see that the seed is well planted in this soil. It cannot be too often repeated that the one unpardonable defect in the teaching of algebra is to keep these two subjects in disunion. To join it to geometry is well: to join it to arithmetic is indispensable. If the practical teacher wishes to convince himself how detached the two subjects are kept in the mind of the average boy, he has merely to ask him to express the sum, and then the product, of 13×17 and 15×17 in terms of 13, 15, and 17. In the case of $13a$ and $15a$ no hesitation is shown, but when the terms are purely numerical his mental confusion is surprising.

The text-books miss yet another opportunity of a similar kind in neglecting to make clear at the right juncture the close connection between the "four rules" in arithmetic and the corresponding rules in algebra. The process of collecting like terms is one with which the pupil is thoroughly familiar, and should not be sprung upon him as something entirely new.

The teacher, having invested an algebraic expression with meaning, should proceed to develop the algebraic rules for addition and subtraction from the arithmetical rules with which the pupil is already familiar. Let him compare, for instance, these two examples in addition:

235	$2x^2+3x+5$
142	x^2+4x+2
21	$2x+1$
398	$3x^2+9x+8$

Here there is no difference, if we take x to represent 10. In the following, however, we note points of divergence:

58	$5x+8$
497	$4x^2+9x+7$
609	$6x^2+9$
1164	$10x^2+14x+24$

In arithmetic the value of the radix is known, and we can transfer from one denomination to another; but in algebra the value of the radix is unknown, and each term has to remain in its own compartment. This apparent defect is partly compensated for in algebra by the employment of negative terms. Examples introducing these negative terms will present little difficulty to the beginner who grasps the above comparison.

In subtraction the correspondence between the algebraic and arithmetical rules may be made equally clear. Thus:

489	corresponds to	$4x^2+8x+9$
163		x^2+6x+3
326		$3x^2+2x+6$

When we come to the following example, however, our ignorance of the exact value of the radix forces us to use negative terms.

632	corresponds to	$6x^2+3x+2$
195		x^2+9x+5
437		$5x^2-6x-3$

Multiplication presents interesting points of divergence:

67 × 38
38

536 = 8 times 67
201 = 30 ,, ,,
2546 = 38 ,, ,,

$6x + 7$
$3x + 8$

$18x^2+21x$ $= 3x$ times $(6x+7)$
$48x+56 = 8$,, $(6x+7)$

$18x^2+69x+56 = (3x+8)$ times $(6x+7)$.

Here again the unknown value of x prevents "carrying," but the results may be shown to be identical if x is fixed as 10. It will be noted that we find it convenient in arithmetic to commence with the smaller denomination—the units—both in the multiplier and the multiplicand; while in algebra the conventional method is to commence with what is presumably the larger term. And this is probably what we should always do in arithmetic were we not constrained to take the opposite course through the necessity for carrying. In the case of the multiplier, however, even in arithmetic we are freed from this constraint, so that the order of the partial products is in both cases a matter of complete indifference. It would be a valuable exercise to work the example given above in the form of $(6x+7)(4x-2)$, $(7x-3)(3x+8)$, and $(7x-3)(4x-2)$, showing that in each case, if x is 10, the result is 2,546.

The correspondence in division may be brought out in the same way. In arithmetic, in fact, we work by the method of detached coefficients, using no negative terms, and, since the value of the group unit is always known to be 10, transferring when possible from one term to another.

Briefly, then, the authors of even the best and latest text-books have missed some of the opportunities of utilising those mathematical concepts which the pupils have presumably acquired in their study of arithmetic.

These slight defects can, however, be easily remedied; for, however lucid and well arranged a text-book may be, the main task of illuminating the mind of the pupil must ever rest with the teacher.

JOINT COMMITTEE ON GRAMMATICAL TERMINOLOGY.

On the invitation of the Classical Association, a joint committee representing the Classical Association, the Modern Language Association, the English Association, the Incorporated Association of Headmasters, the Association of Headmistresses, the Incorporated Association of Assistant-masters, and the Incorporated Association of Assistant-mistresses has been formed with the view of drawing up and submitting to the associations concerned a scheme for a simplified and consistent grammatical terminology, tending in the direction of uniformity in all the languages taught in schools. The first meeting of the committee was held on February 27th, when two additional members were co-opted.

The committee, as now constituted, consists of the following persons: Prof. E. A. Sonnenschein (chairman), Dr. Henry Bradley, Mr. Cloudesley Brereton, Miss Haig Brown, Mr. G. H. Clarke, the Rev. W. C. Compton, Miss J. Dingwall, Prof. H. G. Fiedler, the Rev. Dr. J. Gow, Miss E. M. Hastings, Mr. P. Shaw Jeffrey, Mr. E. L. Milner-Barry, Mr. W. E. P. Pantin, Miss A. S. Paul, Dr. Eleanor Purdie, Miss F. M. Purdie, Prof. Rippmann, Dr. Rouse, Mr. W. G. Rushbrooke, Dr. F. Spencer, Mr. F. E. Thompson, and Prof. R. S. Conway (secretary).

All teachers of literary subjects will be pleased to hear that an effort is being made to draw up a simplified and consistent scheme of grammatical terminology for the use of schools. The value of such a system is obvious. Most teachers recognise the importance of a grammatical framework as a means of understanding a foreign language as well as the mother-tongue; at the same time they feel strongly that time is wasted owing to the variety of terms employed to designate the same grammatical phenomena. At present all is chaotic confusion. One set of

terms is used in English, another in French, and a third in Latin. Furthermore, writers of text-books are often inconsistent, even when dealing with the same language; the student of Latin, for instance, may be introduced on entering his second year to a nomenclature quite different from that with which he became familiar earlier in the course. The number of "standard" Latin grammars is legion, and it is a rare thing to find two editors or writers of exercises who use the same terminology.

The result of all this is that few pupils acquire a real mastery of the principles of general grammar, and a weapon is put into the hands of those who would teach so little formal grammar as to make it quite useless as a means of linguistic training.

It would seem that the work of the joint committee will be twofold. In the first place, it will be necessary to fix precisely the minimum of grammar that should be known at the end of the school course; in the early stages of language teaching approximate uniformity of nomenclature is absolutely indispensable. To decide what this minimum ought to be should not be a matter of much difficulty; an excellent attempt to do so has been made already by Prof. E. V. Arnold in his "Basis Latina." But to come to an agreement about terminology is likely to prove less easy. In spite of the general similarity of the languages usually taught in schools there are many obvious differences in their sentence-structure. Furthermore, teachers of modern languages, who generally explain grammatical points in French or German, will probably wish to retain the terminology at present in vogue in France or Germany. We know of classical masters who have tried to induce their colleagues to agree to a uniform set of grammatical terms for English, French, German, Greek, and Latin, but the attempt has had to be abandoned owing to the use of French terminology by the masters teaching that language. They have been unanimous that the scheme could not be worked. If the committee succeeds in finding a satisfactory compromise a great service will have been done to the cause of education.

It is much to be hoped that the committee will not be too rigid in its selection of names for grammatical phenomena. Several old terms could ill be spared, and yet there is much to be said in favour of many which are more modern. In such cases the old and the new might well stand side by side as acknowledged equivalents.

Object Lessons in Geography and Elementary Science. Book III. By W. Done and F. Tickner. 141 pp.; diagrams and illustrations. (Nelson.) 1s. 6d.—This little book by the headmasters of two pupil-teachers' schools is nothing if not practical. Its subsidiary title might be "Instructions to Teachers with Blackboard Summaries." The instructions are interesting, though they take for granted that the teachers are wofully ignorant of the commonest facts; but the summaries are feeble in the extreme. The coal figures on p. 112 are at least ten years out of date.

PERSONAL PARAGRAPHS.

ST. FELIX SCHOOL, SOUTHWOLD, is this term the poorer for the retirement of its headmistress and founder, Miss Margaret Gardiner. Miss Gardiner's health has not allowed her any longer to carry on the school, into the management of which during the last ten years she has put so much of herself. She is the granddaughter of Edward Irving, and daughter of Samuel Rawson Gardiner, the historian. By inheritance presumably strong on the side of the humanities, by training, through the Cambridge natural science tripos, she fortified herself as an observer of external nature. St. Felix School was her own creation. In 1897 she started it with seven pupils in all, a nucleus which in the succeeding decade developed into a hundred pupils, who collectively make one of the leading public schools for girls in England. The school stands in a beautiful position outside healthy Southwold, and the buildings comprise a school-house and three separate boarding houses; the fees for board and tuition are under £40. In the lower school special importance is attached to the cultivation of the power of expression and to observational science work. Classical girls begin their Greek in the sixth, where the work is specialised. In this case, at any rate, the success of a school has been the success of high ideals. Regarding with anxiety the tendency in our days to pursue pleasure as an end in itself, she strove to animate her pupils with zeal for a life of usefulness. Regardless of the supervising effort involved, she gave every girl the opportunity to develop her individual capabilities. So broad a scheme of education naturally encouraged very varied lines of thought, and the result was seen in last year's final honours schools at Oxford and Cambridge, the names of eight Old Felicians appearing in the lists for economics, classics, mathematics, history, and theology: a truly remarkable record for a school of one hundred girls. Miss Lucy Robinson, who is now headmistress of the Downs School, Seaford, was formerly Miss Gardiner's second in command. Miss L. Silcox, who was headmistress of the Dulwich High School, has succeeded to Miss Gardiner at Southwold.

* * *

THE death of Dr. Simon S. Laurie in his eightieth year removes one who has long been a leader and figure-head in the philosophy of education. I remember him first in connection with a series of psychological lectures delivered at the College of Preceptors. Most of his educational work was more directly connected with Scotland, but for a time he held the office of president of the Teachers' Guild of Great Britain and Ireland, and he was also a corresponding member of the American National Educational Association. Among his most appreciated works were "Primary Instruction in Education" (1867) and "Life and Educational Writings of J. A. Comenius" (1881). Latterly his most distin-

guished work was, perhaps, his Gifford lectures at Edinburgh (1905 and 1906), which were published under the title of "Synthetica."

* * *

A great loss to higher education has been sustained in the death of the Rev. Richard Appleton, Master of Selwyn College and Fellow of Trinity College, Cambridge. Many generations of Trinity undergraduates knew Richard Appleton, either as lecturer in mathematics or theology, as junior dean or senior dean, or as tutor from 1884 to 1894. Very many of those now in holy orders must have come across him as examining chaplain to three successive bishops, Dr. Lightfoot, Dr. Westcott, and Dr. Moule. But his educational services were perhaps best appreciated at Christ's Hospital, where he was educated under Dr. Jacob, the author of capital little Latin and Greek grammars, on which very sound scholars have been bred. Appleton qualified as a donation governor of the Hospital, and for some years did excellent work as chairman of the Education Commitee of the Council of Almoners. It will be very hard to replace him in that capacity. As Master of Selwyn he lost no time in setting on foot a fund for the extension of the college buildings, and so successful was he that he has left a permanent memorial of his mastership in the southern range of buildings of that college.

* * *

Lady Margaret Hall, Oxford, has lost Miss Wordsworth, who has held the post of principal for thirty years. Miss H. Jex-Blake, a daughter of the Dean of Wells, has been appointed her successor. She has been in charge for ten years of St. Margaret's School, Polmont, Stirlingshire.

* * *

Mrs. Woodhouse, headmistress of the Clapham High School, is this year president of the Association of Headmistresses, and in that capacity on March 4th introduced an influential deputation to Mr. Runciman at the offices of the Board of Education. The questions raised concerned the amount of school work entrusted to women inspectors, their official status, their salaries, and the method of their selection. Mr. Runciman was able to shelter himself behind the usage of the other Government Departments on the question of smaller salaries paid to women as compared with men. This may have been expedient, but was not treating the question on its own merits. In regard to status, he said that the whole of the inspectors, men or women, carried the title of H.M.I., and their status was equal.

* * *

To succeed Mr. T. Hay at Midhurst Grammar School the governors have chosen, out of a hundred applicants, Mr. Alfred Cradock Maples, son of the Rev. W. Maples, rural dean of Mansfield, Notts. Mr. Maples was a mathematical exhibitioner of Selwyn, Cambridge, and has seen service at Portsmouth Grammar School and at Exeter Grammar School. He is married, which is as it should be; he is thirty years of age, which is perhaps on the young side. There is plenty for the most energetic of headmasters to do in a quiet town like Midhurst, and Sussexians are not easy to stir.

* * *

Yet one may quote a signal instance of a teacher bringing enthusiasm into a Sussex community. I know Miss Harriett F. Johnson, the schoolmistress at Sompting, as a lively personality. During her reign of about eleven years she has taught her children to sing and dance and learn history *con amore*, and now the infection has spread to the seniors of the village, who recently performed "Julius Caesar" at the Theatre Royal, Worthing. Miss Johnson can afford not to work on strictly conventional lines if she can secure results so eloquent of real stimulus in teaching.

* * *

A thorough Radleian was Mr. Henry Myddleton Evans, the sub-warden of the college, who recently passed away. Forty-one years ago he rowed at Henley in the Radley eight, and also rowed in the University College eight when it was head of the river. From his return to Radley as an assistant-master, in 1875, he regularly coached Radley boys on the river, and was a keen upholder of the traditional English style in rowing. As old boy, tutor, house-master, and river coach he had been for nearly fifty years part of the warp and woof of Radleian life.

Onlooker.

AMERICAN PEDAGOGY.

The study of education is taken seriously across the water. Universities encourage their graduates to research in the subject and are prepared to give the highest academic distinctions to successful students. One result of this is seen in the rise of a type of text-book which is not only a manual of practice, but at the same time a critical exposition of current doctrine based on a wide knowledge of the philosophical and psychological bases of the subject. Dr. Arnold has written such a book in his "School and Class Management."[1] He discusses the teacher, the headmaster, the child, and their respective rights and duties in a way that is often suggestive, in spite of certain crudities of style, due perhaps to paragraph headings such as "Immanence of the aim, means, and impelling feeling in the individual," "Sanctions of rights," &c. The desire to include everything has also led the author to a good deal of rather obvious writing. It cannot be necessary to tell us that a principal should not be influenced by the beauty of individual teachers in distributing supplies to them, or that it is knavery for a principal to tell a

[1] "Text-book of School and Class Management, Theory and Practice." By Dr. Felix Arnold. xxii+409 pp. (New York: The Macmillan Co.) 5s. net.

teacher, *sub rosa*, to do one thing and expect him to do something else, or that the same exalted person should never play upon the feelings of a teacher for the purpose of using him for private ends. The omission of many of these negative injunctions would shorten and improve the book.

The section dealing with the child is an excellent innovation. It is based chiefly on the work of Stanley Hall and Baldwin, and gives a valuable summary of their results so far as they concern school children. Incidentally he touches a weak point in the armour of the Herbartians. We are rapidly coming to realise that it is action towards an end to which the child himself is a conscious party that is educative.

A striking and valuable feature of the book is its abundant reference to authorities. Would that our schoolmasters would take their professional studies half as seriously as Dr. Arnold suggests! Altogether the book is full of promise for the two remaining volumes which the author is preparing.

The teaching of the mother-tongue has received a vast amount of attention in the States. This is possibly due to the necessity of applying a linguistic solvent to the children of immigrants of varied nationality rather than to any conscious pride in English or American literature. Amongst the best known text-books on the subject are those of Dr. C. A. McMurry, who has just republished two of his earlier books in a somewhat shortened form.[1] It deals with one of the most difficult problems the primary-school teacher has to face—that of teaching to read—to read, that is to say, in the broadest sense of the word, which, of course, includes much more than the power to recognise printed symbols. The book is helpful and stimulating from cover to cover. Special attention is given to the literary aspect of the problem, and the teachers who are convinced of the great waste of time incident to the old-fashioned reading-lesson will find much to encourage and help them in their effort "to give the children their heads" much more freely than has been possible in the past. It will be a happy day for the primary school when teachers and authorities cease to talk of "readers" in the annual programme of work for the various standards. We want more books and fewer substitutes which, with their selected snippets and lists of hard words, are calculated to choke the interest of any child whose mind has not already lost its primitive freshness.

Composition, or rhetoric, as the Americans prefer to call it, also occupies a good deal of intelligent thought in their schools. The systematic teaching of English style resolves itself into the problem of how to obtain clearness and directness, and the idea of a comparative study of short pieces which, although in no sense classical, are nevertheless pointed and purposeful, seems a useful one. Exposition, persuasion, introductory paragraphs, arguments *pro* and *con*, are illustrated in a capital selection which the Macmillan Company, of New York, have just published.[1] The compilers' notes at the end of the volume are brief and helpful. The book could not fail to be of service in the upper forms of secondary schools, or in evening continuation schools where English is studied as a means of expression.

1 "Special Method in Reading for the Grades, including the Oral Treatment of Stories and the Reading of Classics." By Dr. C. A. McMurry. viii+351 pp. (New York: The Macmillan Co.) 5s. net.

NEW WALL MAPS.[2]

MESSRS. W. AND A. K. JOHNSTON are supplying schools with a really fine series of bathy-orographical maps at a most moderate price. Their "British Isles" is a good example. It is coloured in blues and browns to show depths at 20 and 50 fathoms, and contours at 300, 500, 800, 1,200 and 2,000 feet, and the general effect from the back of the class-room is excellent and striking enough to impress the class at once with the main physical features of their homeland.

We think there are perhaps just a "wee bit" too many names, but they are not very obtrusive. What is more open to criticism is the exceptional number of river-tributaries inserted, which tends rather to muddle both the clearness of the lowlands and the courses of the main streams. Otherwise we have little but praise for the general appearance and the particular utility of the map. The gaps, for instance, in the various highland masses are obvious, and the insertion of the chief canals—plain enough to the master and easily followed on his own school atlas by the boy—points to their practical utility. An unfortunate mistake in the printing makes the Newry Canal, which in itself is a good concrete sample of this utility, appear to be an ordinary river, or rather an extraordinary bifurcation running both north and south—*i.e.*, to Loughs Neagh and Carlingford. The Leeds and Liverpool Canal, again, which is one of the results of the famous Aire gap, is left unfinished between Leeds and Shipley, and the geographical utility of the gap is by so much impaired. But these are small points. We heartily commend the maps to the notice of teachers.

The "South America" differs in one important respect from the "British Isles." The lower "browns"—*i.e.*, up to 500 ft.—are replaced by "greens," for which, notwithstanding the harshness of the contrast and the outcries of geographers who do not teach small boys and girls, we must confess to a sneaking affection. It makes the teaching of the plains and their lessons so much easier and so much more obvious. The Amazon and Parana-Paraguay lowlands, as shown here, are instances to the point. Compare the "waist of Scotland" (Glasgow-Aberdeen-Edinburgh) when shown in green, as on most

1 "Specimens of Exposition and Argument." Compiled by Milton Perceval and R. A. Jelliffe. x+362 pp. (New York: The Macmillan Co.) 4s. net.

2 "The British Isles, Bathy-orographical"; "South America, Bathy-orographical." 4 ft. × 3½ ft. (W. and A. K. Johnston) 12s. each.
"South America, Oroscopic." 2¾ ft. × 2 ft. (Meiklejohn and Holden.) 6s.

modern physical wall maps, with its comparative insignificance in the brown of the British map. The other South American features are equally prominent, and should be easily picked out by an intelligent set of pupils. Surely, though, there is no need to insert all the Portuguese names for the various ridges across the Brazilian highlands, and the multiplication of Port "This" and Cape "That" obscures the shape of the southern peninsula. With the maps are published sixpenny handbooks, which are really small physical geographies. They should be extremely useful for the teacher with a geological bent, but are, we think, too complicated and complex for the ordinary master, or mistress, who may have a difficulty in finding time—or patience—to study them as they deserve to be studied. A summary of the *chief* features to be noted in the map would have made a useful appendix at the end of the handbook.

The map of Messrs. Meiklejohn and Holden is on a different plan. There is one uniform tint of brown for the land and one of a dark, forbidding blue for the sea. The highlands are picked out by an ingenious arrangement of white and dark brown contour lines, and the publishers claim that in consequence the physical features of a country are shown more effectively and more correctly than in any other map produced up to the present time. It is to distinguish this system from that of the ordinary orographic map that they have invented the term "oroscopic." Our own opinion is that, however correctly the contours may have been drawn, as to which we say nothing, the general result is not effective. Here and there it is good (cf. the Peruvian or the São Paulo coast), but for the most part it is confusing, not to say muddled. However, each to his taste. The idea is new, and the map is cheap. Teachers should get a look at it and decide for themselves.

A SCHOOL COURSE OF SCIENCE APPLIED TO DOMESTIC LIFE.[1]

By M. Wood, B.Sc.
The High School for Girls, Leeds.

You will all be aware that there has been an active movement during the last few years in favour of introducing what is called domestic science and domests arts into secondary schools. As I have been engaged in this kind of work at the Leeds High School for Girls during the last two and a half years, I have been invited to give you an account of my experience and an indication of the objects of such teaching and the actual methods of carrying it out. I must explain, at the outset, that I owe this idea, which I am endeavouring to work out, entirely to Prof. Smithells, of the Leeds University, doubtless known to all here as the pioneer in this movement, who has greatly assisted me in writing this paper. In fact, I am quoting his remarks until I come to describe my scheme of work.

The new High School buildings in Leeds have been provided not only with excellent laboratories for chemistry and physics, and a room for natural history, but also with a large room fitted with a considerable number of small gas cooking-stoves, which constitutes what the Americans call a kitchen laboratory. It is called a "kitchen laboratory" rather than a "kitchen," because it admits of a class of girls carrying out the same simple cooking operations simultaneously on a small scale. It is not so much intended that the girls shall prepare dishes as that they shall be made acquainted by their own experience with different methods and the application of different principles in cooking, and be enabled to carry out experimental trials.

I do not know whether it is necessary to discuss the question of teaching the household arts in secondary schools; but if they are to be taught, it will be admitted that the teaching should be devised so as to cultivate intelligence and to impart systematic and reasonable methods of doing things. There is no doubt that a kitchen laboratory will greatly facilitate the rational teaching of cookery. The real hope, however, of cultivating intelligence in connection with the household arts lies in connecting these arts as closely as possible with the normal work of the school, and above all with the science teaching.

My own special task has lain in modifying the science teaching so as to make it bear as closely as possible on things of household interest. The courses of science in girls' schools have ordinarily been the same as those in boys' schools, and these in their turn have come straight from a university, and present science in what may be called the systematic and abstract form. No doubt, incidentally, things in common life have been alluded to, but this has been parenthetical, and the great hope entertained in regard to science teaching was that it might be a special educational discipline, conferring upon pupils the power of using the scientific method, cultivating the faculties of observation, giving training in the art of experiment, and confirming the habit of logical reasoning. The main interest of science teaching on the old-fashioned lines lay in the fact that there were experiments, often of a startling and novel kind, to be performed, and there can be no doubt that comparatively little interest was awakened by the bearing of scientific knowledge on the surroundings of daily life. Attempts were sometimes made to supplement or supplant the formal teaching of science by giving information about common things But this kind of teaching was apt to be a mere recital of information. The great object of the newer kind of science teaching with which I have been concerned is to make common things and ordinary phenomena the beginning and centre of scientific instruction, to develop scientific principles, to inculcate the scientific habit in the closest possible connection with the facts of everyday life.

In doing this, of course, a great deal of what has hitherto been regarded as orthodox elementary scientific information has to be excluded. Little importance is attached to knowing several ways of making oxygen or to the preparation and properties of several oxides of nitrogen, or to a great many other things which come early in the course of those who are going in the end to become professional chemists. And it is necessary to get detached from the elementary scheme of science training which has become habitual through the traditional requirements of examining bodies.

The household, and above all the kitchen, abounds in things and problems that can be made the object of simple scientific inquiry, and I have found that the interest of girls is thereby secured in the most unmistakable way, that they acquire a real appetite for an intelligent knowledge of these simple things, and that in gratifying this,

[1] A paper read at the annual meeting of the Association of Assistant-mistresses, January, 1909.

ample opportunity is given for conferring those habits of mind which it is considered the chief object of science to impart. It is impossible to explain at all adequately the work that I am trying to do without giving an indication of the syllabus, which I will therefore now proceed to do.

In the *lower third form* (average age about eleven) we begin elementary physics. This includes the metric system, measurement of length, area, and volume, which are being taught contemporaneously in the arithmetic lessons. Then come mass and weight, comparative heaviness of various solids, water, milk and skimmed milk; Archimedes' law; floating bodies; hydrometers. In illustration of water seeking its level we discuss the sources of the Leeds water supply, and make imaginary pictures of its course from the moors and reservoirs to the filter beds, pumping station, and the houses in the highest districts. Great interest is elicited also in making a fountain.

In the *upper third form* (age about twelve) we pass on to fluid pressure; the weighing of air; the barometer; pumps and syphons. Following this comes the study of heat, beginning with the various effects of heat on different substances—*e.g.*, ice to show melting, water to show vaporisation, the laboratory copper air-oven and bread to show chemical change. Change in size of solids, liquids, and gases. Thermometers, including the clinical thermometer. Convection currents in liquids lead to a study of the hot-water system of a house, first by a model and then by an inspection of the arrangements for the supply of hot water in the school. A visit is paid afterwards to a newly built, unoccupied house to determine the course of the water from ball-tap to cistern, boiler, cylinder, and taps. Opportunity is also afforded at this time of directing attention to other important points in the construction of a healthy house, such as the damp-proof course, and a warning is given here not to bank up the earth of the garden above this height, as is sometimes the case through the householder's ignorance. Convection currents in air lead to the use of the chimney, flues, and dampers, which are inspected in the kitchen range in the kitchen laboratory.

Miss Lowe, headmistress of the Leeds High School, has suggested that home tasks in relation to science lessons should be set to occupy about six hours during the term. By this co-operation between the school and the home some compensation could be afforded for the inadequate amount of time which it is found possible to devote to science in the school curriculum. I should therefore set as a home task at this juncture the cleaning of the flues of the kitchen range, lighting a fire, and arranging to have the water hot.

Ventilation, winds, and the reason for the blackening of ceilings above gas flames and of walls above hot pipes finish the study of convection currents.

The transference of heat in solids by conduction leads to a consideration of good and bad conductors. The application of the fact of air being a bad conductor raises the question of clothing and bedding. A comparison of the conducting power of wool, cotton, and linen is made, and the fact brought out that fluffy materials are the worst heat conductors, on account of the large amount of air imprisoned amongst their fibres. There are, of course, many illustrations of the use of this, but its application to cooking in a box filled with sawdust causes the keenest interest. Porridge is brought to the boil in an enamel mug over a Bunsen burner, and then buried in a box of sawdust for a hour or two, when it is discovered to be cooked. Hay may be used if more convenient, as, I hear, is commonly the case in Denmark, and that this economical and easy method of cooking is practised by one farmer's wife in Yorkshire. It is also the principle of the Norwegians' cooking-box used by campers, and of the newly patented "Eetot," a useful cooking-box for people who wish to prepare a hot meal some hours in advance, and have no further trouble with it. The saving in fuel and advantage of slow cooking may also be emphasised.

The transference of heat by radiation is followed by experiments showing that a black surface is both the best radiator and absorber of heat, and the application of this in the colour of clothing.

In the *lower fourth form* (age about thirteen) the idea of *quantity* of heat, as different from *intensity* of heat, is dealt with, leading to the measurement of the heat capacity of different substances and a discussion of the results, both in nature and the household, following from the large heat capacity of water. To emphasise this fact and to show its bearing on household matters we put a doll's iron and an equal weight of water in the oven, so that each is receiving heat at the same rate, and after the lapse of some time find by feeling each that the iron is much hotter than the water. Then we compare the rate of cooling of equal weights of iron and water to bring out the use of the large heat capacity of water as shown in hot-water bottles, hot-water pipes, *entrée* dishes, &c.

I find a simple experiment of this kind seems to go much further, and to be grasped much more intelligently, than a determination of the specific heat of iron and other metals. It has been my lot, for a large part of the past term, to wrestle in the middle school with the measurement of specific heat and latent heat, with the result that I feel very dubious as to the wisdom of spending time over such mathematical work at this stage of the scheme. Mathematics is never likely to be a strong point in a large class of girls, unfortunately, and I am inclined to believe that these calculations will be better deferred until the sixth form is reached. I may remark that, for my own part, I am loth to come to this decision. In talking to girls who have left school, I believe it will be generally found that their ideas of physics and chemistry are of the vaguest, as a result of the fact that unless it is applied to common, everyday experiences they do not realise and retain the knowledge sought.

To return to the detailed scheme: after making a determination of the melting temperature of paraffin wax, butter and margarine are distinguished by their melting-points. Latent heat of liquefaction leads to freezing mixtures and making ice-creams with a freezing machine in the kitchen laboratory. The expansion of water on freezing is naturally illustrated by reference to the disintegration of rocks and soil, and the bursting of water-pipes in a frost. The temperature of the maximum density of water is determined, and attention is directed to the convenience of ice forming on the top of lakes and rivers before the water below is cold enough to freeze. The effect of pressure on the freezing-point of water is determined, and may be illustrated by making snowballs.

The boiling-points of water and other liquids are determined. The effect of pressure on the boiling-point is noticed, and I have found a convenient illustration of this in a patent pan belonging to the cookery department, which purposes to raise the temperature of boiling water by producing a pressure on the steam, the only flaw being that the extra pressure is so slight as to make only half a degree difference in the temperature! I hold out this as a warning to the ignorant housewife how she may

be imposed upon unless careful to observe that the elementary principles of science are applied intelligently.

The uses of high-pressure steam are touched upon, and also the evaporation under reduced pressure in sugar refining. Latent heat of vaporisation raises the questions of why chills are produced by wet clothing, and how the body temperature is kept normal. Emphasis may be laid on the advisability of a complete change of clothes after violent exercise. In connection with this, the humidity of the atmosphere, and its effect on the body are discussed, involving the wet- and dry-bulb thermometer, the dew-point, and the effect of wind and sunshine upon the drying of clothes. The diffusion of gases follows.

In the *upper fourth form* (age fourteen) we begin chemistry with solubility and crystallisation, followed by the study of air, combustion, carbon dioxide, and the effect of animal and plant life on the atmosphere. Chalk, limestone, marble, lime, hard water and methods of softening, effects of acids on metals, composition of water, composition of coal-gas and candles deduced from their products of combustion; study of their flames; Bunsen burner; gas cooking-stoves and gas fires; incandescent light; limelight; the blow-pipe flame. Carbon monoxide.

In Leeds we are apt to be afflicted with fogs in the autumn term, so one day we took the opportunity of studying one, the mind of the class being already occupied with its cause and duration. Why town fogs are more prevalent, persistent, and obnoxious than country mist led us to the burning of sulphur and an acquaintance with the bleaching property of sulphur dioxide, besides showing the most favourable conditions for an artificial fog to form in a flask.

In the *lower fifth form* (age fifteen) a study is made of washing soda, baking soda, and their uses. Emulsions, digestion of fats, washing of greasy dishes, and cleaning of sink pipes are dealt with in this connection. After noticing the effervescence of carbon dioxide when baking soda is warmed in water, we resort to the kitchen laboratory to apply this knowledge in making gingerbread. The expansion of gases with rise of temperature is found to account for the rising of the cake. The reason for avoiding a cold draught by opening the oven door wide or banging it is brought out. Caustic soda and potash and acids, alkalis, and salts are then studied, leading to the making of baking powder and its action. The baking powder is bottled and reserved for use later when flour has been studied. If time permits, bleaching powder and chlorine may be introduced here before going on to *organic compounds*.

I find fats and oils make a good beginning in the study of carbon compounds, following well after salts. The effect of heat brings out the fact that they do not boil, but decompose if heated to a high temperature, giving off inflammable, pungent vapour. In the kitchen laboratory the right temperature for frying is then ascertained by trial with bread, and an observation made of the appearance of the melted fat when the right temperature is reached—quite still, no spluttering, and a blue smoke rising from it. The temperature is then taken by a thermometer. The products of combustion of the burning fat or oil show their composition.

Soap-making is then attempted, and the use of waste fat in the household for soap-making by the cold process pointed out by converting about one and a half pounds of dripping into soap, which we use in the laboratory. The effect of soap on hard water can now be understood.

Petroleum or mineral oil is contrasted with vegetable oils, modern lamps with Roman lamps. Destructive distillation of coal to produce coal-gas, ammonia, and coal-tar follow. Destructive distillation of wood, producing wood spirits and acetic acid. The destructive distillation of sugar is compared with that of egg albumen, and the subsequent passing of ammonia over heated red lead to obtain free nitrogen shows that albumin differs from sugar in being a nitrogenous food, or protein. Protoplasm, a protein, and hence the necessity of protein to build new tissue and repair waste.

The composition of albumin leads to the study of eggs. The temperature of coagulation and effect of continued rise of temperature in hardening it. Their composition, food value, methods of cooking—boiling, poaching, and scrambling. Their use to coat material for frying is illustrated by making fish cakes. Their use for raising cakes may be illustrated by sponge cake, or meringues.

Meat.—Its composition and methods of cooking. Three pieces of meat are weighed, and cooked under different conditions. The first is placed in cold water and brought to the boil, and then allowed to remain a little below boiling temperature; whilst the second is placed in boiling water, and likewise kept at a temperature a little below boiling. After an interval of time, depending on the size of the pieces of meat, each is taken out and examined as to appetising odour and flavour, the fact being brought out that an initial high temperature seals the cut ends of the fibres, and thereby causes no loss of nutriment, salts, or extractives. A comparison of the water in each case bears this out, and the fact that there is a loss of nutriment in a stew if it is skimmed and in beef or soup if strained. The third piece of meat is boiled the whole time, and on examination found to be in a stringy condition, the fibres falling apart readily, but themselves tough and indigestible, as is often the case in re-cooked meat.

The process of stewing, boiling, baking, and grilling may then be intelligently performed in the kitchen laboratory. A study of cartilage and bone leads to gelatine and making soup. Then the dietetic value of meat extracts, beef tea, and soups is dealt with, bringing to light the fact that they are not valuable as foods, but as stimulants.

Upper fifth form (age sixteen). *Sugars.*—The effect of heat on cane sugar, barley sugar, caramel, browning. Composition of sugar—a carbohydrate. Its use as a food. Grape sugar.

Flour.—Starch and gluten separated. Percentage weight of gluten found. Effect of heat on each, showing their respective compositions, gluten being a proteid. Use of gluten in raising bread. Bursting of starch grains in boiling water shown and examined under the microscope. Other starchy foods. Their use in thickening sauces and gravy, illustrated by making sauce. Pastry-making. Use of baking powder. A study of yeast precedes brewing and bread-making.

We make malt from barley which we have allowed to sprout, and find the starch is changed to sugar, and then proceed to ferment the malt with yeast to produce alcohol. We separate the alcohol from ale by distillation, and discuss its effects on the different organs of the body. Bread-making follows, with the study of all its underlying principles, then the making of vinegar, which we were successful in brewing from weak syrup last year. My efforts to obtain a specimen of the vinegar plant being fruitless, it was encouraging to find that it nevertheless made its appearance in due course, having evidently been associated with the yeast used. This leads to a study of yeast moulds and bacteria in relation to the method of preservation of food. A knowledge of the favourable con-

ditions for their growth gives the clue to the various processes adopted, as shown, for instance, in dried fruits, fish and milk, bottled fruits, tinned goods, jams, and pickles.

A study may now be made of the digestive organs and the physiology of nutrition; and digestion experiments may be carried out with artificial gastric and pancreatic juice on bread, meat, boiled egg, &c., in a warm bath kept at the body temperature for two hours. The composition and functions and circulation of the blood and respiration must necessarily be taught in this connection. Then follows the dependence of animal and plant life on each other, and the necessary aid of certain bacteria for the carrying on of the processes involved in the complete life-cycle. This brings in a discussion of the process of decay of animal and vegetable matter, and the disposal of sewage.

The study of *milk* is, of course, very important, involving a determination of its composition, its value as a food, the precautions adopted for keeping it pure, and the methods of preserving it. Sterilisation and pasteurisation. A study of the composition and food value of *butter* and *cheese*. We pass on to *vegetables, fruits, and nuts*; their dietetic value; the pros and cons of vegetarianism; and the cooking of vegetables.

Beverages.—Tea, coffee, cocoa; aerated waters. Adulteration of foods.

In the *sixth form* the girls specialise, and those who choose science for examinational work will, I believe, find themselves able to follow up their previous course in an intelligent manner. At present I have two intending to pursue science at Cambridge. They, however, have not been through the whole of the scheme just mapped out, as this was only started two and a half years ago. It is open to those sixth-form girls who do not take up science as a special subject to continue the scheme by one lesson a week in physiology.

I may add, in conclusion, that lack of time has prevented me from carrying out the complete scheme as yet, and that, of course, every year gives one new ideas and fresh illustrations.

EDUCATIONAL PROGRESS IN LONDON.

THE voluminous annual report of the proceedings of the London County Council for the year which ended on March 31st, 1908, deals exhaustively with educational affairs in London during the period concerned. The following paragraphs are extracted from the report, and we must refer readers to the official publication itself [1] for detailed information on the progress of education in London during the year reviewed.

TEACHING STAFF.—The teaching staff engaged in the Council's elementary schools consisted at the end of March, 1908, of 1,523 head teachers and 11,510 assistant teachers, of whom 4,187 were men and 8,846 women, showing an increase of 3 head teachers and 469 assistant teachers upon the figures for the preceding year. During the year 1907–8 there were 145 promotions of teachers and instructors. The number of teachers in the non-provided schools maintained by the Council on March 31st, 1908, was 794 head teachers and 3,741 assistant teachers (of whom 998 were men and 3,537 women), as compared with 829 head and 3,611 assistant teachers on the same date in the preceding year, while the number of appointments of head teachers dealt with by the Council in such schools during the year 1907–8 amounted to 100.

The deficiency in the number of permanent teachers in the service continues to be appreciably less than at the corresponding time of the two or three years preceding 1905–6. The vacancies for permanent assistant teachers not filled in any way numbered: in March, 1904, 35; in March, 1905, 47; in March, 1906, 6; in March, 1907, 10; and in March, 1908, 7.

During the session 1907–8 there were in the evening schools upwards of 4,000 men and women engaged in teaching ordinary and special subjects, including those who are also teachers in the day schools.

At the end of March, 1908, the staff engaged in the various technical institutes and schools of art administered by the Council consisted of 324 men and 82 women, as compared with 275 men and 72 women at the same time in the preceding year.

ORGANISED GAMES.—Since 1906 the code of regulations for public elementary schools has provided that suitable organised games, such as football, hockey, and rounders for boys, and similar appropriate games for girls, might be played during the hours set aside for an afternoon attendance, and might count as a part of the school routine. The games, however, must be played under competent supervision and instruction, and the period so occupied must be confined to one afternoon in each week, and must be not less than half an hour nor more than two continuous hours, exclusive of the time, if any, spent in going to or returning from the playing field.

The results of a limited experiment in organised games, authorised by the Council in December, 1906, have been carefully considered, and in view of the success of the experiment the Council has decided that organised games shall be included as a permanent part of the ordinary curricula of Council and non-provided schools.

Facilities for the playing of games have been granted by H.M. Office of Works at Regent's Park, and by the Parks Committee at thirty-four parks and open spaces. Apparatus for organised games will, so far as practicable and consistent with educational requirements, be manufactured at the manual training centres to which the schools requiring such apparatus are contributory, and at the School of Building, Brixton.

SITES AND BUILDINGS.—The value of all the sites purchased previous to March 31st, 1907, was approximately £4,796,667. During the year ended March, 1908, the Council purchased various interests in twenty-one sites for permanent elementary schools at a cost of £40,752, exclusive of legal costs. The total cost, therefore, of the sites purchased, or agreed to be purchased, up to the end of the year under review is £4,837,420. Small portions of sites have been sold, with the consent of the Board of Education, to local authorities to enable them to carry out street improvements.

The total number of permanent schools which had been erected and opened to March, 1907, was 497, providing accommodation for 580,855 children, exclusive of eight transferred permanent schools with accommodation for 4,994 children. During the year under review five additional schools, providing accommodation for 4,254 children, and one enlargement of an existing school, accommodating 398 children, were opened. On the other hand, a net number of 4,935 places have been lost by the revision of accommodation in 118 existing schools. On March 31st, 1908, there were therefore 502 permanent schools with accommodation for 580,572 children, and 8 transferred permanent schools, the accommodation of which was 5,022. The total number of permanent Council schools and transferred permanent schools on March 31st, 1908, was 510, providing accommodation for 585,594 children.

[1] "London County Council. Annual Report of the Proceedings of the Council for the Year ended 31st March, 1908." (P. S. King and Son.) 1s.

Fire or Panic.—The Education Committee has been engaged for some time past in looking into the whole question of the adequacy of the arrangements made for conducting fire drill in Council schools, and some of the members of the committee are visiting various schools where the existing arrangements or the exits are considered either by the managers or by the Council's inspectors to be unsatisfactory. In certain cases where it is desirable that some minor alterations and improvements should be effected, the necessary expenditure has been sanctioned, and the work has been put in hand. In other cases steps are being taken to provide external iron emergency staircases, and the external doors of Council schools will be altered where necessary, so that they shall open outwards in every case.

The Council has also revised the rule which required that communication doors between the various departments of schools and the communication gates between the playgrounds of the departments should be kept locked. Communication doors will in future be kept unlocked, but gates will continue to be locked.

The committee is dealing with the general question of the kind of alarm best suited for Council schools, in view of the varying conditions obtaining with regard to size, arrangement, and disposition of class-rooms and exits, and is considering a revision of the fire-drill regulations of the late authority, which have been provisionally approved by the Council.

Special Subjects.—At the end of March, 1908, there were 210 woodwork and 12 metal-work centres, at which 57,980 children were in attendance. The boys in Standard V. and upwards, and those in Standard IV. who are more than twelve years of age, are instructed in classes of twenty and forty by specially qualified teachers. There are about 72,753 boys who are thus eligible in elementary day schools, and it will be seen, therefore, that about 87·6 per cent. of this number receive instruction.

There were 193 cookery, 129 laundry, 28 combined cookery and laundry, and 45 housewifery centres, at which 44,185 children were in attendance at the end of March, 1908, as compared with 50,619, the number upon the books. Approximately, therefore, 87 per cent. of the number of children eligible received instruction.

Moral Instruction.—The code of regulations for public elementary schools, 1906, contained a new paragraph with reference to moral instruction as follows: "Moral instruction should form an important part of every elementary-school curriculum. Such instruction may either (i) be incidental, occasional, and given as fitting opportunity arises in the ordinary routine of lessons; or (ii) be given systematically, and as a course of graduated instruction. . . ."

Careful consideration has been given by the Council as to the method of giving moral instruction which should be adopted in public elementary schools maintained by the Council. As a result, the head teachers of Council schools and managers of non-provided schools have been informed that the Council, having considered the relative values of the systematic and the incidental methods of giving moral instruction, desires that such instruction should be incidental, but that no objection would be raised to the giving during the educational year 1907–8 of systematic moral instruction where the direct method had already been adopted, and for which provision had been made in the time-table of the school. It was decided, however, to review the whole question towards the end of the educational year 1907–8.

Corporal Punishment.—Prolonged and careful consideration was given to the whole question of corporal punishment in the public elementary schools maintained by the Council, and the conclusion was arrived at that while corporal punishment should be reduced to a minimum, it would be unwise to abolish it altogether. The regulations for the administration of corporal punishment were drawn up by the late authority after long experience and full knowledge of the varying circumstances of the different schools. It was decided that these regulations should in the main stand, but certain modifications were introduced with the view of removing any possibility of danger from the administration of corporal punishment, and of introducing additional safeguards against any abuse of the stringent provisions under which alone it may be administered.

School Attendance.—In the year 1907–8 there were 653,093 children of all ages from three upwards in average attendance, 505,698 at Council schools and 147,395 at non-provided and other efficient schools. The average attendance for such children was 88·9 per cent. of the number on the books, being an increase of 0·2 on the figures for 1906–7. In the case of the senior departments of the Council schools the percentage for 1907–8 was 92·8 in the boys', 90·7 in the girls', and 91·4 in the mixed departments; while in the non-provided schools it was 91·4 in the boys', 88·9 in the girls', and 89·4 in the mixed departments. As showing the financial effect of the improvement in attendance which has taken place during the present year, it may be mentioned that, if the percentage of average attendance had remained the same as it was for the previous year, viz., 88·7 per cent. instead of 88·9 per cent., the amount payable to the Council in respect of Government grants would have been about £3,000 less than was actually received.

Open-air Schools.—The committee has had under consideration the desirableness of establishing open-air schools for anæmic and unhealthy children during the summer months. It had for some time been evident that there were in the elementary schools, chiefly in the poorer districts, many children who, owing to their poor state of health, were unable adequately to profit by the instruction given therein, and for whom it appeared to be desirable to make some special provision. The mental and physical development of these children was clearly being retarded by their unhealthy mode of life and insufficient feeding, and in order that children of this class might be able to compete on more equal terms with others who were more fortunate in the respects mentioned, it appeared essential that they should have a complete change of environment with the view of their obtaining an abundance of fresh air and good, wholesome food. An offer by the Royal Arsenal Co-operative Society, Woolwich, of their wood and recreation ground for the purpose in question gave facilities for the establishment of the school. The school, which was open for a period of three months during a part of the summer and autumn, was carried on under the provisions of the Elementary Education (Defective and Epileptic Children) Act, 1899. A sum of £400 was voted by the Council for the maintenance of the school, and the cost of food and boots was defrayed out of voluntary funds. The conditions under which the school was conducted enabled instruction to be given on practical lines. At the close of the experiment great improvement was noticeable in the health and physique of the children, and they were brighter and more self-reliant. Notwithstanding the fact that the conditions under which the school was carried on were not altogether favourable, the experiment may be regarded as a marked success.

UNIVERSITY LOCAL EXAMINATIONS.

(1) Oxford Set Subjects for 1910.

Preliminary.

Religious Knowledge.—(*a*) 2 Kings (chap. i.–xvii.), (*b*) St. Mark, (*c*) Acts (chap. xvii.–xxviii.), (*d*) Church Catechism.

English History.—Either the Outlines from 1065 to 1485, or the Outlines from 1485 to 1714, or the Outlines from 1689 to 1837.

English Author.—(*c*) Either (α) Kingsley's "The Water Babies" or (β) Tennyson's "Marriage of Geraint" and "Geraint and Enid"; (*d*) either (α) Stevenson's "Treasure Island" or (β) "Poems of Country Life," by George and Hadow (i.–vii., ix.–xx., xxvi., xxviii.–xxxiii.)

Geography.—(iii) The geography of *one* of (*a*) England and Wales, or (*b*) Scotland and Ireland, or (*c*) India.

Elementary Latin.—"Scenes from the Life of Hannibal," by W. D. Lowe.

Elementary Greek.—Sidgwick's "First Greek Reading Book" (ed. iii.), Exx. 1–35, 51–60.

Elementary French.—Either "Contes des Fées," by Perrault, or "Le Château de Vaux," by Gozlan.

Elementary German.—"Am Rhein," by K. Wichmann.

Junior.

Religious Knowledge.—(*a*) 2 Kings, (*b*) St. Mark, (*c*) Acts (xiii.–xxviii.), (*d*) Prayer Book.

Ancient History.—Outlines of Greek History from 445 to 323 B.C., with special questions on the Peloponnesian War.

English History.—(α) Outlines of English History from 55 B.C. to 1135 A.D.; or (β) Outlines of English History from 1042 to 1485; or (γ) the Outlines of English History from 1399 to 1660; or (δ) the Outlines of English History from 1485 to 1714; or (ε) Outlines of English History from 1689 to 1837.

General History.—From 410 to 1200.

Foreign History.—Outlines of General European History from 1763 to 1815.

English Literature.—(*c*) Either (α) Tennyson's "English Idylls and other Poems" or (β) Shakespeare's "As You Like It"; (*d*) Shakespeare's "Richard II.," "Julius Caesar," "Macbeth"; (*e*) either (α) Shakespeare's "Coriolanus," or (β) Shakespeare's "Twelfth Night," or (γ) Scott's "Woodstock"; (*f*) either (α) Burke's "Reflections on the French Revolution," pp. 1–107 (Clarendon Press), or Matthew Arnold's "Selected Poems," i.–iv. (Clarendon Press); (*g*) "The Oxford Treasury of English Literature," vol. iii. (pp. 112–162, 195–282), by G. E. and W. H. Hadow; (*h*) Byron's "Childe Harold," Canto iii.

Geography.—General: (i) Geographical Principles, (ii) British Isles, (iii) *one* of (*a*) Mediterranean region, (*b*) Monsoon region of Asia, (*c*) Atlantic region of North America.

Latin.—Caesar, De Bello Gallico VI.; Virgil, Aeneid VI.

Greek.—Sophocles, Antigone; Marchant's "Greek Reader," vol. ii.

French.—Either Halévy's "L'Abbé Constantin" or Feuillet's "Roman d'un jeune homme pauvre."

German.—Hoffmann's "Heute mir, morgen dir."

Senior.

Religious Knowledge.—(*a*) 2 Kings, (*b*) St. Mark, (*c*) Acts, xiii.–xxviii., (*d*) Hebrews, (*e*) Hebrews in Greek, (*f*) The Prayer Book.

Ancient History.—Outlines of Greek History from 445 to 323 B.C., with special questions on the Peloponnesian War.

English History.—Either (α) 55 B.C. to 1135 A.D., or (β) 1042–1422, or (γ) 1399–1603, or (δ) 1603–1714, or (ε) 1689–1815, or (ζ) 1792–1880, or (η) the Outlines of English Political History from the Anglo-Saxon Conquest to 1837.

General History.—410 to 1200.

Foreign History.—Outlines of General European History from 1763 to 1815.

English Literature.—(*c*) Either (α) Tennyson's "The Lady of Shallot and other Poems," and "English Idylls and other Poems," or (β) Shakespeare's "As You Like It"; (*d*) Shakespeare's "Richard II.," "Julius Caesar," "Macbeth"; (*e*) either (α) Shakespeare's "Hamlet," or (β) Shakespeare's "Coriolanus," or (γ) Scott's "Woodstock"; (*f*) either (α) Spenser's "Faerie Queene" I., or (β) Burke's "Reflections on the French Revolution" (pp. 1–107, Clarendon Press edition), or (γ) Matthew Arnold's "Selected Poems"; (*g*) "The Oxford Treasury of English Literature," vol. iii. (pp. 1–282), by G. E. and W. H. Hadow; (*h*) Byron's "Childe Harold," Cantos ii., iii.

Geography.—(i) Principles of Geography, (ii) British Empire, (iii) *one* of (*a*) Europe, (*b*) Asia, (*c*) North America (including West Indies).

Latin.—Caesar, De Bello Gallico V. and VI., or Virgil, Aeneid V. and VI.

Greek.—Xenophon, Anabasis V., VI., or Euripides, Medea.

(2) Cambridge Set Subjects for July and December, 1910.

Religious Knowledge:—*Preliminary.*—(*a*) St. Mark, or (for Jewish students only) Genesis xii.–xxiv., xxvii.–xxxv., xxxvii., xxxix.–end; (*b*) 2 Kings i.–xvii.

Juniors.—(*a*) St. Mark, or (for Jewish students only) Genesis xii.–xxiv., xxvii.–xxxv., xxxvii., xxxix.–end; Exodus i.–xx.; (*b*) 2 Kings; or (*c*) The Acts of the Apostles xiii.–xxviii.

Seniors.—(*a*) St. Mark; or (for Jewish students only) Genesis xii.–xxiv., xxvii.–xxxv., xxxvii., xxxix.–end; Exodus i.–xx; or (*b*) The Acts of the Apostles xiii.–xxviii.; (*c*) 2 Kings; or (*d*) Hebrews.

English Language and Literature:—*Preliminary.*—(*c*) Scott, "The Lay of the Last Minstrel," Introduction and Cantos i.–iii.; or (*d*) W. C. Perry, "The Boy's Odyssey" (Macmillan).

Juniors.—(*b*) Shakespeare, "Twelfth Night"; or (*c*) Scott, "The Lay of the Last Minstrel"; (*d*) a paper of questions of a general, not a detailed, character on Scott, "Ivanhoe," and Tennyson, "The Coming of Arthur," "The Passing of Arthur."

Seniors.—(*b*) Shakespeare, "Twelfth Night"; or (*c*) Chaucer, "The Prologue to the Canterbury Tales"; (*d*) a paper of questions of a general, not a detailed, character on Spenser, "Faerie Queene" II. (Clarendon Press), Shakespeare, "Macbeth," and Scott, "Kenilworth."

History, Geography, &c.:—*Preliminary.*—History of England. The paper will consist of three Sections on the periods (*a*) 1066 to 1485, (*b*) 1485 to 1603, (*c*) 1603 to 1714 respectively. Candidates may, if they wish, select questions from all three of the Sections, or may confine themselves to two or one of them.

Geography. Great Britain; and general Geography.

Juniors.—(*a*) History of England. The paper will consist of three Sections on the periods (*a*) 1066 to 1509, (*b*) 1509 to 1688, (*c*) 1688 to 1832 respectively. Candidates may, if they wish, select questions from all three of the Sections, or may confine themselves to two or one of them. Or (*b*) Outlines of the History of the British Empire from A.D. 1492 to A.D. 1784. Or (*c*) Outlines of Roman History from B.C. 133 to B.C. 44.

(*d*) Geography. The United Kingdom of Great Britain and Ireland, and either Asia or North America and the West Indies.

Seniors.—(*a*) History of England. The paper will consist of three Sections on the periods (*a*) 55 B.C. to 1509 A.D., (*b*) 1509 to 1714, (*c*) 1714 to 1867 respectively. Candidates may, if they wish, select questions from all three of the Sections, or may confine themselves to two or one of them. Or (*b*) History of the British Empire, as for Juniors. Or (*c*) Roman History, as for Juniors.

(*d*) Geography. The paper will consist of four Sections on (*a*) Great Britain and Ireland, (*b*) Asia, (*c*) Africa, (*d*) North America and the West Indies, respectively. Candidates may select questions from all four of the Sections, or may confine themselves to any three or any two.

LATIN :—*Preliminary.*—Caesar's "Helvetian War," adapted by W. Welch and C. G. Duffield (Macmillan).

Juniors.—(*a*) Caesar, "de Bello Gallico," VI., 1–20; (*b*) Caesar, "de Bello Gallico," VI., 21–44; (*c*) Virgil, "Aeneid," VI., 1–476; (*d*) Virgil, "Aeneid," VI., 440–901.

Any two of these four to be taken.

Seniors.—Livy, I., 1–41; or Cicero, "pro Murena." Virgil, "Aeneid," VI.; or Horace, "Odes," I.

GREEK :—*Juniors.*—(*a*) Xenophon, "Anabasis," III., 1–2; (*b*) Xenophon, "Anabasis," III., 3–5; (*c*) Aeschylus, "Prometheus Vinctus," 1–560; (*d*) Aeschylus, "Prometheus Vinctus," 526–1093.

Any two of these four to be taken.

Seniors.—Thucydides, VII., 1–54; or Xenophon, "Oeconomicus," i.–x.; Homer, "Odyssey," XI., XII.; or Aeschylus, "Prometheus Vinctus."

FRENCH :—*Juniors.*—Erckmann-Chatrian, "Waterloo," 14–end.

Seniors.—Michelet, "Louis XI et Charles le Téméraire"; Sandeau, "Mademoiselle de la Seiglière" (Comédie).

GERMAN :—*Juniors.*—Hauff, "Das Wirthshaus im Spessart" (omitting "Das Kalte Herz").

Seniors.—Goethe, "Iphigenie"; Kohlrausch, "Das Jahr 1813."

HISTORY AND CURRENT EVENTS.

HISTORY moves quickly in South Africa. When this century began Briton and Boer were fighting for supremacy, perhaps even, in the thoughts of both antagonists, for existence there. That war ended in the summer of 1902 with a treaty made at a place with a somewhat significant name—Vereenigung (Union). In 1906 and 1907 responsible government was granted to the two new colonies, Transvaal and Orange River. And now, after long deliberations at Durban and Cape Town, a National Convention for the union of the four South African colonies, Cape Colony, Natal, the Transvaal, and Orange River, has put forward a scheme of federation which seems likely to meet with general acceptance. The whole scheme is worthy of careful study. Some of its details are significant of desires for mutual concession. For example, the Orange River Colony is to resume its old name of Orange Free State, though with the addition of the word "Province," while both English and Dutch are to be official languages of the Union, and no officer is to be dismissed because of his want of knowledge of either.

BUT what is the nature of the new federation of South Africa? Students of federations have been accustomed to classify governments of this kind according as they answer to certain test questions. One of these refers to the respective limits of central and local authorities. Does the central government, students ask, exercise only certain powers granted to it by the local governments forming it, as in the United States of America and in the Commonwealth of Australia, or does it possess all powers which are not expressly reserved for local authorities, as in the German Empire? South Africa apparently proposes to adopt the latter alternative, for while we have no full list of the powers of "South Africa," the powers of the Provincial Councils are summed up in thirteen articles. Apparently, too, though it is not stated, the central government will treat directly with individual citizens in its own sphere, and not through the local authorities. The constitution of South Africa, therefore, will closely resemble a unitary State like Great Britain and Ireland, not a loose confederation like the United Netherlands of the seventeenth and eighteenth centuries. To use the German phrases, it will be a Bundestaat, not a Staatenbund.

A MATTER which, according to the newspaper reports, at one time threatened to create much difficulty, has been settled, so far as the proposals go, in a very modern way. There are to be two capitals of South Africa. Pretoria is to contain the Government offices, and thus be the seat of the Executive, while Parliament is to meet at Cape Town. This arrangement may even now lead to some difficulty in working, but it would have been impossible before the days of rapid communication. Contrast, for example, mediæval England with the various towns at which Parliament used to meet before it finally settled down at Westminster, and the picture presented by Lord Cromer in his "Modern Egypt" of the constant telegraphic communication between himself at Cairo and, on the one hand, the British Cabinet at Westminster, and, on the other, Gordon at Khartum. The mediæval Parliament was compelled to meet in the bodily presence of the King and his Court. Westminster, Cairo, and Khartum were, for purposes of consultation, practically the same place.

BOSNIA and Herzegovina, which, having been occupied and administered for thirty years by Austria-Hungary, have now, apparently, been finally annexed to the Dual Monarchy, are to have a Diet, like all other parts of that heterogeneous State. It is interesting to note that this Diet is to be based on the system of estates, with which we are familiar in mediæval England. There are to be ecclesiastical members and elected lay members. The franchise is universal and direct, but there are to be three lay "estates," the first consisting of the largest taxpayers, university graduates, and leading merchants, the second of the burgesses, and the third of the country population. So far, we recognise our old English constitution. But the inhabitants of Bosnia and Herzegovina are mainly either members of the Greek or Roman Church or are Mohammedans. The seats in the Diet are to be distributed according to the numerical strength of these various creeds, and the members of each "Church" are to vote separately. This is, so far as we know, unique, except that the new Turkish Parliament is similarly constituted. So political are ecclesiastical divisions in the East of Europe.

ITEMS OF INTEREST.

Free education from the elementary school to the university, and the immediate abolition of fees in secondary schools and technical colleges, were among the demands of a deputation of the Parliamentary Committee of the Trade Union Congress which was received by Mr. Runciman at the Board of Education at the beginning of last month. The deputation complained that the fees at State-aided secondary schools are so high that working people cannot afford to pay them, and that the reservation of 25 per cent. of free places is not observed. Mr. Runciman was able to show that at more than half the secondary schools receiving grants from the Board, the free places exceed 25 per cent. of the accommodation, and that the great majority of these schools provide the stipulated ratio of free places. He could have added that nearly three-fifths of the whole number of pupils in the secondary schools have previously attended public elementary schools, and that nearly one-half of these pay no fees.

The fact is, the generous provision of junior scholarships has made education in secondary schools free to any pupils in elementary schools capable of deriving advantage from it, whose parents will let them remain at school. If all fees were abolished in secondary schools, it may be doubted whether there would be any great increase in the number of pupils unless the parents were induced to keep their children at school by maintenance grants equivalent to the wage-earning capacities of the children. The child of working-class parents begins to earn his living when he is fourteen years of age, if not before; and it is of little use to offer him free education at the secondary school, or at the university later, unless he is given at the same time a sufficient grant for maintenance. For the really capable child, whose work is likely to benefit the nation, this provision for his continued education should be regarded as a sound investment, but to fill our secondary schools with children maintained and educated by funds provided by the ratepayers, directly or indirectly, is undesirable both educationally and economically.

What the country really needs is highly efficient State-aided secondary schools with moderate fees—say £12 to £18 a year—and a late leaving age, instead of schools with low fees and a leaving age of about fifteen years. Sufficient places should be provided in these schools for really capable children from elementary schools upon the condition that the complete course, ending at about eighteen years of age, is followed. Only in this way can schools of a high educational type be secured in which the teachers are well qualified and paid adequate salaries. Schools having no fees or low fees, and from which the majority of the pupils depart at fifteen years of age or thereabouts, are only called secondary by courtesy.

Too late to make a reference to the subject possible in our last issue, a Royal Commission was appointed to inquire into the question of university education in London. The recent inauguration of the Imperial College of Science and Technology in the first place, and other important considerations secondarily, have made it necessary to consider carefully the relation of the University of London to the new Imperial College and to other institutions of higher education in the metropolis. The terms of the reference to the Commission are: "To inquire into the working of the present organisation of the University of London, and into other facilities for advanced education (general, professional, and technical) existing in London for persons of either sex above secondary-school age; to consider what provision should exist in the metropolis for university teaching and research; to make recommendations as to the relations which should in consequence subsist between the University of London, its incorporated colleges, the Imperial College of Science and Technology, the other schools of the University, and the various public institutions and bodies concerned; and further to recommend as to any changes of constitution and organisation which appear desirable. In considering these matters, regard should also be had to the facilities for education and research which the metropolis should afford for specialist and advanced students in connection with the provision existing in other parts of the United Kingdom and of his Majesty's dominions beyond the seas."

The constitution of the Commission suggests that a special effort has been made to avoid any representation of vested interests. Doubtless, in view of the comprehensive character of the terms of reference, a large number of persons with expert knowledge of the work of the University and of its affiliated colleges will be given the opportunity of appearing before the Commission, for it is to be hoped that every shade of opinion will be heard. Mr. Haldane, the Secretary of State for War, is the chairman of the Commission; and the other members are Viscount Milner; Sir Robert Romer, formerly Lord Justice of Appeal; Sir R. L. Morant, Permanent Secretary of the Board of Education; Mr. Laurence Currie, a partner in Messrs. Glyn, Mills, Currie and Co., bankers, of Cambridge; Dr. W. S. M'Cormick, secretary to the Carnegie Trust for the Universities of Scotland; Mr. E. B. Sargent; and Mrs. Creighton, widow of the late Bishop of London. The joint secretaries are Mr. J. Kemp and Dr. H. F. Heath, director of special inquiries and reports to the Board of Education, and formerly connected with the University of London.

There appears to be little doubt that the supply of certificated teachers for elementary schools is now in excess of the demand. The whole question of the staffing of elementary schools has recently been engaging the attention of the Executive of the National Union of Teachers. Towards the end of February a deputation from the Executive waited upon the President of the Board of Education to direct attention to the whole question. The representatives of the teachers in elementary schools put their case well and forcibly. The extensive employment of unqualified teachers, under the technical name of "supplementary" and "provisional" teachers, was pointed out to Mr. Runciman; also the appointment of certificated teachers at the rate of payment intended to meet the case of supplementary teachers, the enormous size of many of the classes in elementary schools, the inadequacy of the Treasury grant for elementary education, and the number of certificated teachers at present out of employment. Mr. Runciman was sympathetic, but unable to give any definite assurance that the condition of things would be improved very soon. The question of cost seems to be at the bottom of the whole matter. We do not as a nation believe sufficiently in education to make any great sacrifices on its behalf. Though it is a very slow matter, the only effective means to secure a better state of educational affairs is gradually to educate the rate- and tax-payer as to the supreme national importance of efficient education; when that has been accomplished the money will be found to make smaller classes in our elementary schools possible and the employment of uncertificated teachers impossible.

The need for a greater expenditure on education in this country was emphasised by Mr. A. H. D. Acland in his presidential address to the National Education Association at the end of February. Mr. Acland was frankly pessimistic about English education, and his varied experience adds great weight to his words. He said: "Although I would prefer to be optimistic, yet it seems to me there is every ground for complete pessimism at the present time with regard to educational improvement viewed from the real broad national point of view. It is quite true that administrators and many teachers are doing their best to improve methods and to make progress so far as they can. It is perfectly true that some advance has been made in certain branches of secondary and higher education; but although it is more and more frequently admitted in an abstract and theoretical way that efficient education lies at the root of social reform for which we are constantly calling out, the public as persistently as ever refuse to face the results of these admissions. Public opinion, broadly speaking, in my opinion, is hostile to all attempts to get rid of our notable backwardness in education in this country." Later in his speech he remarked: "I have come to the conclusion, and it is a lamentable conclusion to come to, that the enthusiasm of the few has, and will have, little effect until really large sums of money—several millions a year—are forthcoming for the improvement of national education. At present there is little sign of this, but I think it is better to be frankly pessimistic than to delude ourselves, as we sometimes do, by going to conferences or by other methods expressing pious opinions, with the belief that we are on the way to real efficiency. I do not deny that many people are hopeful and in earnest, but I do deny that what they strive for can be obtained until the barriers of which I have spoken are removed."

The subject of the continued education of boys and girls after they have passed out of the elementary school is receiving great attention. We summarised the recommendations of the Royal Poor Law Commission last month. Since then the Prime Minister has received a deputation on the subject, the London County Council Education Commission has adopted drastic resolutions, and there is every reason to hope that the subject will not be allowed to drop. Among educational associations the council of the Teachers' Guild has passed the following resolutions: (*a*) That in view of the educational waste which is caused by the fact that, in the case of the great bulk of the children passing through the elementary schools, education ceases at thirteen or fourteen years of age, this council is of opinion that it is desirable that powers similar to those contained in the Scotch Education Act, 1908, should be conferred upon local education authorities in England and Wales. (*b*) This council recognises that, as a preliminary to the enforcement of compulsory attendance at continuation schools, facilities should be provided by employers, either by shortened hours of labour or by special provision during working hours.

The annual general meeting of the Teachers' Training Association was held at the London Day Training College on March 13th. The following officers were elected for the ensuing year: Prof. J. W. Adamson, president; Mr. Oscar Browning, Mr. M. W. Keatinge, and Miss L. Brackenbury, vice-presidents; Miss M. R. N. Holmer, honorary treasurer; Mr. Charles Fox, honorary secretary; and Miss Powell, Miss Cooper, Miss Dingwall, Miss Morton, Miss Wood, Prof. J. Adams, and Prof. J. Welton, to serve on the committee.

It has been decided to alter the names of the secondary schools in London maintained by the London County Council. Instead of using the names which have hitherto been adopted, such as the L.C.C. Chelsea Secondary School, the L.C.C. Eltham Secondary School, the schools are to be known as the County Secondary School, Chelsea, the County Secondary School, Eltham, and similarly in the case of the sixteen schools of similar character.

We have received from the secretary of the Historical Association a bound copy of a dozen leaflets issued by it. The association is doing a most useful work. It meets periodically for lectures and discussions on the teaching of history in schools, and issues leaflets containing all kinds of information—bibliographies, examination syllabuses, reports of lectures, &c. The official address is 6, South Square, Gray's Inn, London, W.C., and we recommend our readers to join the association and get the benefit of its advice and help.

We have received from the Hardy Patent Pick Co., Ltd., of Sheffield, copies of several publications which have been prepared specially for use in schools. The company is willing to supply parcels of these publications to any headmaster or headmistress who may apply for them. A large coloured wall diagram depicts a section of a coal pit and workings, and is accompanied by a clear description of the drawings. Several attractive booklets are also being distributed by the Hardy Patent Pick Co., Ltd., under the general title of "Tales told in a Shop," and they are calculated to bring home to young readers the romance of the manufacturing industries. One of these is the "History of the Pick," told by itself, and another deals with the manufacture of a spade. These publications will prove of great assistance to teachers who give "object" lessons.

A second conference of the Fabian Education Group will be held on similar lines to that of last year from April 8th to 17th, at Llanbedr, near Barmouth, a most picturesque part of North Wales. Lectures will be given by Dr. Lionel Tayler, Dr. Marion Hunter, and Mr. Laurieson, of the Ruskin School, and others, chiefly on subjects connected with the educational aspects of the Poor Law Reports. Any persons who are interested in education are welcomed, and information can be had in full from the Fabian Office, 3, Clement's Inn, W.C.

The Board of Education has just published a list of thirty holiday courses which will be held on the Continent at different times during the present year, but mostly in the summer months. Seven of the courses are in German-speaking countries, viz., at Griefswald, Jena, Marburg, Neuwied, Lübeck, Kaiserslautern, and Salzburg; three in French Switzerland, at Geneva, Lausanne, and Neuchâtel; one in Spain, at Santander; one in Italy, at Florence; and the rest in France, at Besançon, Dijon, Grenoble, Nancy, Boulogne-sur-Mer, St. Servan, St. Malo, Paris, Versailles, St. Valery-sur-Somme, Tours, Honfleur, Bayeux, Granville, Caen, Lisieux, and Villerville. The list gives the date of each course, the fees, return fares from London, lowest cost of boarding, principal subjects of instruction, address of local secretary, and other details of importance to intending students.

Holiday courses for the study of the French language and literature will be held for the twelfth time next summer at the University of Grenoble. The courses will last from the beginning of July to the end of October. Last year the courses were attended by 589 students. We have received particulars of the arrangements made for this summer, and it appears to us that the greatest pains have been taken to meet the requirements of English school-

masters and schoolmistresses wishing to improve their French, and at the same time to secure recreation and rest. Intending students should communicate either with M. Th. Rosset, the general secretary, or with M. Marcel Reymond, the chairman of the committee, at the University of Grenoble.

In a recent report of the books and apparatus sub-committee of the L.C.C. Education Committee some interesting information is given as to the books chosen as prizes by pupils in public elementary schools. The seventeen most popular books in 1908 were the same as those of the previous year, with the rather remarkable exception that "Gulliver's Travels" supplanted "Pilgrim's Progress." It is perhaps unnecessary to add that all the editions of "Gulliver's Travels" on the list from which prizes could be chosen have been adapted for children's reading. The seventeen most popular prize books in 1908 were, in order of popularity: Andersen's "Tales," Grimm's "Stories," "Tanglewood Tales," "Robinson Crusoe," "Tom Brown's Schooldays," "Little Women," "Old Curiosity Shop," "Alice in Wonderland," Lamb's "Tales," "Coral Island," "John Halifax, Gentleman," "Water Babies," "Ivanhoe," "Gulliver's Travels," "Westward Ho!" "Heroes," "David Copperfield."

In our issue for October last (vol. x., p. 392) we commented on the first part of "Statistics of Public Education in England and Wales, 1906–7–8," prepared and published by the Board of Education. Part II., which deals entirely with financial statistics, is now available (Cd. 4506). Of the total net expenditure of the Board of Education during 1907–8, which amounted to £13,272,017, we notice that £11,023,433 went to pay grants to meet expenditure in respect of elementary education, and a further £101,520 in allowances and pensions to teachers in elementary schools. Grants for secondary schools and for day classes in secondary schools amounted to £342,584, an increase of £88,374 over the preceding year. The education of pupil-teachers accounted for £294,809, an increase of £113,718 over the year 1906–7. Administrative expenses at the Board of Education and the inspection and examination of schools cost £423,222. Schools and classes giving instruction in technology, science, and art received from the Board £456,573. The Blue-book gives detailed information as to how these large amounts were distributed, and makes it possible to ascertain the parts of the country which benefit most from the Parliamentary vote.

SCOTTISH.

The reports which the executive committee has hitherto submitted to the annual meeting of the Carnegie Trustees have dealt mainly with the transactions of the previous year. Advantage has been taken, however, of the seventh annual report to make an exhaustive survey of the work already achieved in the various departments of the Trust's activities. During the quinquennial period that has just closed, £246,374 was paid over to the four universities. Of this £23,000 went to libraries, £131,644 to buildings and equipments, and £91,730 to capital endowments for teaching purposes. The second quinquennial distribution, which begins this year, has been framed on similar lines, and will, at the close of the second lustrum, have increased the teaching resources in the four universities by permanent endowments amounting to £87,500, in addition to providing more than £100,000 for buildings and equipment.

This year's report deals in considerable detail with the efforts of the Trust to improve and extend the opportunities for scientific study and research in the Universities of Scotland. Though this department has not appealed so strongly to the public imagination as the payment of class fees for students and the grants for building purposes, it is probably the one that has the greatest possibilities of national service. Mr. Balfour, at the annual meeting of Trustees, in the course of an eloquent plea for original research, pointed out that there is no more serious waste in the world than the waste of brains, of intellect, of originality, of scientific imagination, which might be used to further the knowledge of mankind. The action of the Carnegie Trust should do much to remove this reproach from Scotland. Already it has in its service a band of eager, devoted students, before whom the secrets of nature and science are slowly unfolding. The actual expenditure upon this part of the scheme during the past four years has been £27,755. The Trustees called in a committee of experts to examine and assess the work already achieved by the beneficiaries of the Trust. Their report is an interesting and inspiring document. In the department of physical and chemical science alone the fellows and scholars have contributed one hundred and seventeen papers to the scientific journals, all of them embodying the results of original observation, and several of them of first importance. In every department, indeed, the work accomplished by the beneficiaries is full of encouragement for the future, and reflects the highest credit on the administration of the executive committee.

The Duchess of Sutherland, addressing a meeting under the auspices of the Dundee Highland Society, said that the Sutherland Technical School is likely to be the pioneer of many others in the north. Everyone, she believes, will be agreed that it is a right thing to give practical training to boys between the ages of thirteen and seventeen, and there is no place where this can be so well and so suitably given as within the bounds of their own county. For this purpose it is essential that the schools shall have boarding houses or hostels attached, and that they shall have adequate endowments at their disposal to help on the able and deserving pupils in the outlying districts. It has been calculated that the Sutherland Technical School alone requires an endowment of £30,000 to enable it to carry out its educational mission with success, and the Duchess declared that she has made up her mind to raise that sum in the course of the next few years.

The spring meeting of the Classical Association was held this year in Aberdeen. Prof. Harrower, in his opening address, dealt with the recent changes in the arts curriculum of the universities. He maintained that the demands made upon secondary-school pupils on the classical side are too high, especially in view of the greatly increased requirements in other necessary subjects. He therefore entered a strong plea for a return to sanity in the entrance classical examination, and, in doing so, he is likely to have the whole-hearted approval of classical teachers throughout the country. Prof. Myers, of Liverpool, delighted the meeting with a suggestive paper on "The Place of Classical Geography in the Classical Curriculum."

The spring meeting of the Scottish Modern Languages Association was held in the University of Glasgow. M. Martin, French lecturer in the University, delivered a most interesting and suggestive address on "Outlines of a Curriculum in French for a Secondary School." He said that three functions should be kept steadily in view in all language instruction, and all teaching should be based on these: (*a*) literary culture, (*b*) mental discipline, (*c*) practical utility. At different periods emphasis has been laid on one or other of these functions to the neglect of the others, but

a scientific curriculum must have regard to all three. At the close of the meeting a discussion took place on the new university ordinances, and a motion was passed unanimously that the options for the M.A. degree should include one for French and German, on the same conditions as that for Latin and Greek.

By the will of Mr. James Duncan, of Jordanstone, Alyth, the residue of his estate, amounting to about £60,000, is bequeathed to Dundee, for the purpose of founding there a school of industrial art. One of the aims of the school will be to give a thorough training in all that relates to the art side of textile manufacture. In connection with the institution it is proposed that there shall be a women's department for giving instruction in such subjects as household thrift and management, cookery and laundry work. The testator very wisely provided that not more than half of the bequest shall be utilised in buildings, the remainder going to form an endowment fund. In order to prevent overlapping, the new school is to be managed by trustees representative of Dundee University College and Technical Institution.

The two rival Associations of Secondary Teachers in Scotland, after a number of preliminary conferences, were formally incorporated last month, under the title of "The Secondary Education Association of Scotland." Mr. J. Alison, headmaster of George Watson's College, was appointed president, and Mr. L. M. Fyfe, Rector, Queen's Park School, was appointed vice-president. Membership is open to teachers engaged in intermediate or secondary schools in Scotland, professors and lecturers in the universities, and others interested in secondary education.

IRISH.

The permanent inspectors of intermediate schools have at last been appointed by the Board of Intermediate Education. The six names have not been officially announced as yet, but it is known that they are all Irish or connected with Ireland, and that none of them has been the head of an Irish school. Some of them have had some experience of English education, but it is understood that between now and midsummer they will be sent on a roving commission to visit English schools, and to become acquainted with the methods of teaching, the standard of education, and other matters connected with secondary education there. After the summer it is stated that they will be instructed to visit Irish schools, and for two years their work will be limited to a general inspection of intermediate work without special reports on individual schools, at all events in any way affecting the school grant. Every friend of Irish education must hope that they will rise to the occasion, and treat their important duties in a broad, sympathetic spirit. They are handicapped in one respect to begin with, for there is no one but must regret that the salaries of the new inspectors are to be taken out of the funds which have hitherto always been available and used for the school grant. The appointment of the inspectors was preceded by a conference between several of the Intermediate Commissioners, with Dr. Starkie in the chair, and representatives of the heads of intermediate schools. A *précis* of this conference is being prepared and will be issued to the schools. It will, however, be a confidential document. The inspectors appointed are all laymen, three Roman Catholics and three Protestants; no lady was appointed.

The reports of the examiners for the Intermediate Board for 1908 were issued early in March. Such documents are usually depressing, if salutary, reading. These are no exception to the rule. It is true that the examiners try to gild the pill, but they are not very successful in concealing the wearisome nature of their task. It is good, however, for teachers to be reminded of the perennial faults of youth. The worst candidates seem to be in the junior grade. The pass candidates in this grade are by far more numerous than in any other, and their standard seems very low. In Latin we read of them that, while "the average was not bad," "the composition was conspicuously weak," and "the spelling of English words was, in the case of too many students, notably bad." In French the verdict is, "Year after year, the junior pass papers are extremely bad"; in German, "the pass papers were to a great extent unsatisfactory"; in Irish, "the composition was very weak . . . the continuous prose was wretchedly done, often a mere incoherent jumble of words, tenses misused, idioms ignored"; "the grammar was very bad"; in history and geography "the junior pass paper was poorly answered by most of the boy students, and not very well by many of the girls." And so on throughout the reports. Attention is directed specially to this grade and these candidates, because with a large percentage this is the end of their secondary education, and it would be worth while to improve their teaching if possible.

The reports cover sixty-eight pages. With regard to the various subjects, there is much criticism in detail throughout the pamphlet, and only a few general remarks can be excerpted. In Greek the examiner is satisfied that "good solid work was done during the year," and the answering "is considerably better this year." Verse composition, both in Greek and in Latin, was weak. In Latin the composition was weak in the middle and junior grades; in the preparatory, the translations "were often exceedingly poor—both in idiom, grammar, and punctuation." The French examiner thinks his criticism last year has had good effect, and that there is "a better acquaintance with everyday conversational phrases." "There is still room for much further improvement." "All the compositions from the preparatory to the senior grade have been marred by ignorance of the French genders." In German the weak point was "the translation at sight, even in the higher grades." The Irish examiner is severe. "The large increase in the number of entries for Irish has unfortunately not been accompanied by any improvement in the standard of excellence." The teaching methods appear to be wrong. Irish is not treated as a living language, and the regular inflexions of nouns and verbs have not been properly mastered. Strange to say, the senior grade "is the worst grade of all."

In reference to English composition, "in some directions progress was marked, notably in spelling, but in other directions there was retrogression, in punctuation and especially in the sequence of tenses." Composition "must be planned," and the prescribed books are not used intelligently. The examiner in history and geography submits three general suggestions: that there should be (1) more appeal to judgment and reasoning powers; (2) greater attention to Irish history; and (3) more extensive use of maps. In arithmetic and algebra, "far too much time appears to be wasted in doing 'rough work' on the backs of the answer books." "Students should be taught to make neat corrections." "Certainly the worst feature was the plotting of graphs." In geometry, "in the practical questions in all grades there was much careless measuring," and "often confusion between the inch and centimetre scales." The trigonometry was satisfactory, except that "there is great room for improvement in style." "Bad spelling, untidiness, lack of method in working and of precision in expression were common faults." Bookkeeping and theory

of music were satisfactory, the former especially so, but in shorthand "the result cannot be regarded as satisfactory." The science examinations were only for honour candidates, and the chief criticism which recurs again and again is that the results of experiments have not been sufficiently discussed, nor their full meaning brought home to the pupils. Drawing is taken only by a small number of honour candidates, and on the whole was satisfactory.

MORE and more discussion and attention are being given in recent years to commercial education in Ireland. While there is, on the one hand, a greater inclination to recognise the need for education in specially commercial subjects, there is, on the other, a recognition of the supreme importance for those who wish to enter commercial life of a good general secondary education. Much less progress, however, has been made in Ireland than in other countries in establishing special commercial colleges for students entering on a business career. This is made clear in an important address on "Commercial Education," delivered this winter in Newry by Mr. C. E. Town, deputy assistant secretary for commercial education to the London Chamber of Commerce. He suggested, among other things, that the Intermediate Board might co-operate with the London Chamber of Commerce in issuing certificates in commercial subjects. The progress abroad in this subject is shown by the following figures: in the New York State alone in the United States there are 500 business training colleges; in Germany twelve years ago there were 112 commercial schools, to-day there are more than 430; in 1892 there were three schools established in that country for women, now there are more than 80. London has been making efforts, mainly through private initiative, to recover lost ground, but its supineness has allowed the "German clerk" to gain a strong foothold in the metropolis. In Ireland there is a good commercial school in Rathmines, a Dublin township, and there are classes in some of the northern towns, but much remains to be done. The work requires, however, more encouragement from leading merchants, bankers, and commercial men.

THE Department of Agriculture and Technical Instruction will hold this year summer courses, partly in July and partly in August. Those in July will be in experimental science, in laboratory arts, in drawing and modelling for teachers in day secondary schools and in day and evening science and art classes; in domestic economy and in manual training (woodwork) for teachers in day secondary schools; in office routine and business methods for teachers of elementary commercial subjects in technical schools; in hygiene and sick nursing and in dressmaking for domestic economy instructresses, and in Carrickmacross lace-making, crochet work, embroidery, and sprigging for teachers of these crafts. Those in August will be in rural economy; and in manual training (metal work), in building construction, and in practical mathematics and mechanics for manual instructors. These courses will be held in Dublin, and there will be the usual allowances for teachers taking them.

WELSH.

A STRONG protest is arising against the establishment of detached training colleges such as those projected at Barry and Caerleon, instead of trying to focus institutions of higher learning in the university centres of Aberystwyth, Bangor, and Cardiff. The objections pointed out against the isolation of the training colleges from the university atmosphere are that this would tend "(1) to constitute the teachers a permanently distinct class apart from the general body of Welsh students; (2) financial grants would be disbursed over a number of institutions and places which could be more effectively applied to a few; (3) the sense of educational unity in Wales would be weakened, and a check would be given to that accession and assimilation of new educational interests which are the life-blood of the university colleges."

THE announcement of the appearance of the estimate in the Chancellor of the Exchequer's Budget of an extra grant of £15,000 for the University and the University Colleges of Wales has given great satisfaction. It is supposed that £3,000 will be given for the purposes of the University, and the remaining £12,000 will be divided between the University Colleges of Aberystwyth, Bangor, and Cardiff, though the exact allocation of the amount is as yet unspecified. There are many directions in which this extra grant would relieve intense pressure, such as increasing the remuneration of the staffs of the colleges, who have for long borne the heat and burden of the day on very inadequate salaries; the more adequate development of the libraries of the colleges, especially on the arts side, and the laboratories on the science side; the provision of fellowships in the University and in the colleges.

THE Council of University College of South Wales and Monmouthshire at Cardiff made a new departure of an interesting kind at the last meeting. It was resolved to make a grant towards publishing certain pamphlets on commercial subjects in connection with the department of economics in the college. The Universities of Oxford and Cambridge have their University Presses, and the Universities of Manchester and of Liverpool, at any rate, have already closely associated the publication of academic treatises with the teaching side of their work. The Guild of Graduates of the University of Wales has made some progress in the same direction. It is to be hoped that the three Welsh colleges will make some determined and systematic progress towards the establishment of college presses, or at least a University Press. Universities exist for the advancement of learning as well as for preparing students for degree examinations.

IN connection with Prize Day at the Penarth County School for Girls, Mr. John Andrews made some interesting remarks on the teaching of Welsh in the Welsh schools. He thought it would be inadvisable for the English-speaking children in Wales to spend much time in the study of Welsh when that time could be more profitably employed in the study of a modern and "more important" language. There is one argument of supreme importance, viz., that, "however important the literature of Wales in Welsh has been in the past, in the future there will be only comparatively an unimportant one, for in order to get a larger circle of readers a writer will prefer English, and will not dream of using the Welsh language when the English language is open to him." It is curious how seldom those who discuss the Welsh question see that from the academic point of view the study of Welsh is really justified because it represents a Celtic type apart from the Teutonic, and that for this reason many Englishmen and foreigners desire to study it.

ARRANGEMENTS are now in hand for a great Welsh pageant at Cardiff. This pageant will represent the great Welshmen and memorable facts of Welsh history. More will probably be accomplished in this way in making known Welsh history than has been effected by the history teaching in the schools so far. It has been decided that the first episode will be that of an incident in the life of Caradoc, the great chief of the date 50 A.D., and with

the scene in south-east Wales, inhabited then by the Silures. Caradoc approaches the king and queen, and tells of the approach of the Romans. The king turns to the archdruid and asks his advice. He tells the herald to summon the people. They come. The Silures then appear with faces painted blue, and in battle array. The women follow, with knives drawn. And the Silures march off to meet the Romans. The idea of a pageant of Welsh history is a very good one, and will arouse great enthusiasm.

The announcement has been made at a Carnarvonshire Calvinistic Methodist meeting of a decrease in Sunday-school membership of 558, and of average attendance of 483. The suggestion was made that the views entertained of Sunday observance, and the existence of the spirit of sport and amusement, accounted for the change. One speaker thought that attendance in the secondary schools affects religious tastes, but on the other hand a minister stated that the young people who pass through the secondary schools and colleges are the most efficient and useful members of the Church. One speaker said it is necessary to ask whether the day of the Sunday schools is over or whether they are to take a lower place in the economy of Christian instruction in Wales. The suggestion was made as to the necessity of providing the youth with good religious literature, and that in Welsh.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

A Three-term Course in German. By J. G. Cochrane. vii+232 pp. (Blackie.) 2*s.* net.—The first forty-two pages are taken up with the accidence. Then follow a number of lessons with questions on the text, and with grammar exercises and notes. The author's procedure seems to have been to select a number of pictures from various sources, and in too many cases representing typically English, not German, scenes, and then to write his text to suit them. Now and then, however, it seems as though it had been written by a German with an inadequate knowledge of the requirements of English pupils. The number of words introduced is excessive, and often the words and phrases are too complicated for beginners. In the Formenlehre we notice much uncertainty in the terminology; at one place we have *Hinweisende Bestimmungswörter*, at another *Adverbien der Modalität*. In the grammar exercises there is too much unapplied grammar. The vocabulary is not complete. The fundamental mistake, however, is indicated by the author himself when, in the preface, he states that "practically no attempt has been made to graduate the lessons." As regards both grammar and vocabulary, this is essential in a beginners' book.

German Historical Reader. By J. E. Mallin. viii+92+lii pp. (Bell.) 2*s.*—The pieces in this reader have been in part taken, in part made up from Hummel's "Vaterländische Geschichte für preussische Volksschulen," and the editor's work has been conscientiously performed. The vocabulary is, however, so large and occasionally so difficult, that we should consider the book suitable for the intermediate stage, although it is "sent out as an elementary reader." The notes are generally good, but it is a drawback that there are no references to the lines of the text, which have not been numbered. The vocabulary, containing about 3,000 words to about sixty-four pages of text, appears to be complete. The text is well illustrated. Misprints are rather too frequent—*e.g.*, *wolte* (p. 9), *kampfte* (p. 15), *fehr* (p. 28), *Kühnkeit* (p. 31), *preussischen* (p. 48), *Konig* (p. 49), *uberall* (p. 64), *Berbündeten* (p. 66), *fo* (p. 67), *vergrössen* (p. xlv).

Alltägliches. Ein Konversations- und Lesebuch. By M. B. Lambert. viii+251 pp. (Heath.) 2*s.* 6*d.*—The text takes up 106 pages, the vocabulary ninety-five, with not far short of 5,000 words. The text is followed by twenty-one pages of German questions on the text, and by twenty-four pages of exercises for retranslation. If any English teacher wishes his pupils to learn the German for athletic exhibition, concert-reading, in fall, bureau (=*Kommode*), next block, sales lady, drug store, and other Americanisms, here is his chance. Indeed, a good deal about American life and ways can be gleaned from this book—for which, frankly, there is no use on this side of the Atlantic.

Balzac, Le Médecin de Campagne. Edited by de V. Payen-Payne. xx+310 pp. (Cambridge University Press.) 3*s.*—Balzac's novel runs to 240 pages of the Pitt Press edition, and according to the slow progress in many schools would take a class about two years to read. Lucky the class who are able to get through it in a term! The editor's work has—as we expect from Mr. Payen-Payne—been thoroughly conscientious. His life and criticisms of Balzac show ample acquaintance with the literature on the subject, and the notes are clearly the result of much hard labour; they occupy sixty-six pages. Sometimes a little space might have been saved by the omission of questions (*e.g.*, what is the French for bullet?) better left to the teacher, and by cross-references (*e.g.*, p. 77 l. 21, cp. p. 12 l. 27; p. 78 l. 10, cp. p. 5 l. 33; p. 79 l. 19, cp. p. 1 l. 11; p. 119 l. 36, cp. p. 53 l. 25). A few points may be added for the editor's consideration: p. 5 l. 33, the derivation of *toise* might have been given; p. 14 l. 39, *manquer* is also followed by the genitive and the accusative; p. 17 l. 9, *si* is not infrequently followed by the pluperfect subjunctive, and *when* rarely by the subjunctive; p. 49 l. 27, the difficulty of pronouncing initial *sp, st, sc* existed in vulgar Latin, but hardly in French; p. 91 l. 19, "park" would here seem a better rendering of *un jardin anglais* than "an ornamental garden." But these are small points; as a whole, the edition is very good indeed.

Boileau, Satires, Épitres et l'Art Poétique. xii+226 pp. (Dent.) 1*s.* 6*d.*—This is a fresh volume in the dainty series "Les Classiques Français," issued under the general editorship of Mr. Warner Allen. Mr. Symington's etching, which serves as a frontispiece, is not very convincing, but M. Augustin Filon's preface is excellent. The editor supplies a short bibliography, but no notes, which, in the "Art Poétique" at least, are almost essential for the English reader. Perhaps the publishers can be persuaded to issue this and some other volumes in the series for school use.

Esperanto Self-taught. By William W. Mann. 128 pp. (Marlborough.) 1*s.* 6*d.*—Mr. Mann has written his guide to Esperanto in accordance with the principles adopted for the "Self-taught" series, and has thus produced a book of considerable practical value. Whether it was necessary to give the pronunciation of every word and phrase in a language of which the ordinary spelling is phonetic may well be doubted; on the other hand, the addition of some pages of connected prose would have been a distinct gain.

Classics.

The Odes of Horace: a Translation and an Exposition. By E. R. Garnsey. 230 pp. (Swan Sonnenschein.) 6*s.* *Epilegomena on Horace.* Same author and publisher. 176 pp. 5*s.* net.—The first of these books, which seems to have been suggested by Dr. Verrall's "Studies in Horace," is a very careful and thorough discussion of the various questions relating to the composition and interpretation of the Odes. It is, in fact, too thorough: everything is reduced to a system, and there seems to be no room left for the poet's fancy, for humour and playfulness, qualities that have hitherto seemed to be of the essence of the Horatian spirit. According to the author, everything turns about the conspiracy of Murena and the events that were connected with it. He examines the poems with a remarkable minuteness, and detects allusions to his King Charles's head in the most unlikely places. Those odes that offend against modern taste are explained, not as giving any reflection of the poet's own views, but as pointing a moral at the expense of Murena; here the writer seems to lack a sense of historical perspective, for it is notorious that the ancients thought otherwise on sexual questions than we do, and Horace himself in the journey to Brundisium has shown that he feels with his own day. It is idle to deny that Murena may have been the suggestion of this or that ode; we may even grant that his career plays a much larger part in Horace than has been generally understood; but to admit all the claims made in the book would be to make out Horace a monomaniac, not a poet. When again Mr. Garnsey goes on to spy Murena in Juvenal, and Persius, and the dinner of Trimalchio, which occupies part of his "Epilegomena," he is surely carrying things too far.

To discuss these books in detail would need another book, not a review; we should much like to do it more fully, but it would be impossible to do justice to the argument in a reasonable space. We have therefore been obliged to give our impressions after reading them with care, and to recommend that the books themselves be studied. We have been greatly interested in the books because they are original, and afford quite a new light on the author; they point to new sources of parallel, and do, we believe, contain truth; but how much is truth and how much imagination cannot be said without long consideration. The weak point seems to us, as we have said, to be the very completeness on which the author insists. We direct special attention to the excellent sketch of the political circumstances which he gives. The translation need not detain us; it is only given as a help to interpretation.

Latin Lessons for Beginners. By D. L. Lothman. xii+178 pp. (Ginn.) 4*s.*—Every now and then, in examining school books, we light on a sentence which sets us thinking: Why did not the author follow this up? In the preface to this book we read: "Translating English to Latin is difficult, and perhaps nothing is more discouraging to first-year pupils than failure in this." Yet in the early stages, whatever is done must be repeated in one form or another hundreds of times. But Mr. Lothman's remedy is this: "Therefore the English-to-Latin part of each translation lesson has been made brief, with no more difficulties than are necessary to introduce the new words, forms, and constructions of the lesson." But if it be brief, it is useless. Why did not the editor follow up his clue—for his insight is true, he speaks what all teachers find out—by inquiring whether translation into Latin is right at this stage at all? He would find that modern-language teachers, who have done all the work lately in inquiring into first principles, speak with no uncertain sound. In fact, the language in the early stages has to be learnt by imitation, not by translation. What will the beginner, so easily discouraged, make of Exercise II.: "Of the gates, the gate (obj.), the gates (obj.), the gate's; he loves the queen; they love the queen; he praises the girl; they praise the girl; he praises the girls," &c., &c.? Or, indeed, the Latin, which was compiled "with a view to furnishing interesting and instructive reading-matter, as well as drill exercises": *e.g.*, "Fuērunt, fuerint, fuerant servi; fuerāmus, fuerimus, fuimus domini; fuistis servi, estis domini," &c.? A most repellent beginning, enough to give a bad first impression of Latin: and how first impressions live! We regret profoundly to see so many books coming out, none of which are based on an examination of principles. Those who are content with a system that must repel the learner will find one advantage in this book: a synopsis of English grammar prefixed, which, if rather too elaborate in parts, is certainly useful. The exercises lead up to Caesar, and the latter part of the book is a simplified selection from Caesar with Nepos's Hannibal. On p. 73[17] is a mistake: *cuique* for *uni cuique*. All long quantities are marked; there is a vocabulary.

The Famulus of Terence. Edited by J. Sergeant and A. G. S. Raynor. 72 pp. (Clarendon Press.) 2*s.*—The "Eunuch" is one of Terence's most witty and lively plays, but as a whole it is unsuitable for school use. In the volume before us, the play is shortened and modified so as to exclude the objectionable parts. It is based on the "Pincerna," a version made by Cardinal Newman with additions of his own: most of his lines have now disappeared, and those kept have been revised in the light of new knowledge. With stage directions taken from practical experience, it is likely to be very welcome in schools. The reviser is Dr. Gow. The editors have added a few notes. But does *ilicet* contain an "old infinitive form *i*"? There is no positive evidence, and, so far as we know, no analogy for such a form; the word might, however, be for *ir' licet* by *illicet*. *Exclusti* and the like, again, are far more likely to be compressed forms than sigmatic aorists, which do not take the perfect *-ti*. In *egone quid velim* (141) an ellipse of *quaeris me* is impossible: neither *egone* nor *quid* could stand with it. These examples show that the notes need revision.

The Aeneid of Virgil. Translated into English by J. W. Mackail. vi+300 pp. (Macmillan.) 5*s.* net.—Prof. Mackail's translation has long been recognised as excellent. His revised edition retains the original as a whole, but "a number of errors and inelegancies have been removed; and, at the same time, the opportunity has been taken to bring it into conformity with a standard modern text." This is the text of the Oxford Bibliotheca: but Prof. Mackail omits the first four lines of the "Aeneid," restored by the editor of that text. Prof. Mackail is anxious to guard himself against expressing "any opinion for or against their authenticity," but thinks that "in a translation there are obvious reasons" for omitting them. No reason is obvious to us. We can only suppose that Prof. Mackail's literary sense has here been dulled by habit and tradition. The lack of balance in the first long sentence, where *arms* has no excuse for its existence, must be obvious to a critic like Prof. Mackail; no less so, that the promise is not fulfilled—for arms play but a small part in the "Aeneid"—and that the omitted lines are Virgil's own self. *Arma virumque cano* is more like Ancient Pistol than Virgil. But we need say no more: Henry has vindicated

the omitted lines once for all. We need not offer a criticism on the book itself, because it has already stood the test of time. The style is pleasing, with perhaps too strong a touch of the archaistic.

Vergil, Aeneid XI. Edited by L. D. Wainwright. With Vocabulary. xliii+132 pp. (Bell's Illustrated Classics.) 1*s.* 6*d.*—This volume is like the others of its series, which we have often described and criticised. The points that call for remark are, as we may repeat, these: margins too narrow, pictures interrupting the text, full running analysis in English, elementary notes. Some may think the last two to be merits: we do not. We have now the authority of the Rev. E. Warre on our side, who, in writing to the *Times*, says that these helps prevent the learner from using his mental powers. Instances taken at random are: "*bello*: ablative, 'in war'—*istis*: as usual, of the second person—*patribus*: ablative absolute." Long vowels (not concealed) are marked in the vocabulary; by a mistake, *ăgrestis* implies that the vowel *a* may be long.

English.

The Sources and Analogues of "A Midsummer Night's Dream." Compiled by Frank Sidgwick. 196 pp. (Chatto and Windus.) 2*s.* 6*d.* net.—The Shakespeare Classics, of which this is one, are generally edited by Prof. Gollancz, and if he is as lucky in the rest of his editors as in Mr. Sidgwick we may expect an interesting and valuable series. The general idea is to have a collection of "reprints embodying the Romances, Novels, and Plays used by Shakespeare as the direct sources and originals of his plays," to be comprised in from twelve to twenty volumes appearing at short intervals. In the book before us there are, first of all, some seventy pages of introduction, in which adequate treatment is given to the main plot, the grotesque plot, the fairy plot, and Oberon's vision; then follow the illustrative texts with notes, and, lastly, there is an extremely good index. Teachers and students could have nothing more fascinating. The tasteful binding in antique grey boards is very acceptable. The series is sure to have an immediate welcome.

A Treasury of English Literature. Selected and aranged by Kate M. Warren. With general Introduction by Stopford A. Brooke. (Constable.) 1*s.* net per volume.—The two new volumes in this Treasury are "Waller to Addison" (xxi+141 pp.) and "Johnson to Burns" (xxi+182 pp.). When we reviewed the two earlier volumes last August we hinted that we were anxious to see how the work proceeded. It is proceeding excellently and confirms all our hopes. By using it along with the famous primer which it is meant to illustrate no teacher need be at a loss; together they provide splendid material for lessons in English literature.

(i) *Daniel Defoe, Memoirs of a Cavalier.* Edited by Elizabeth O'Neill. xi+292 pp. (ii) *William Cobbett, Rural Rides.* Edited by J. H. Lobban. xx+231 pp. (iii) *William Hazlitt, Characters of Shakespeare's Plays.* Edited by J. H. Lobban. xxiii+281 pp. (iv) *The Travels of Captain John Smith.* Edited by E. A. Benians. xii+247 pp. English Literature for Schools Series. (Cambridge University Press.) 1*s.* 4*d.* each.—Even if it is a little difficult to know what kinds of classes will read one or two of these reprints in the ordinary school course, every credit is due to the Cambridge University Press for producing so neat and comparatively cheap a series of texts. Hazlitt's "Characters" and John Smith's "Travels" are the sort of stuff that every boy and girl should read, and if they have been produced cheaper they have certainly not been produced more pleasantly. We wish the venture all success—but we have our doubts about the price.

Select English Classics. Selected by A. T. Quiller-Couch. (i) *Marvell, Poems* (4+32 pp.); (ii) *Coleridge, Lyrical Poems* (5+48 pp.); (iii) *Goldsmith's Traveller and Deserted Village* (4+30 pp.); (iv) *Blake, Poems* (4+32 pp.); (v) *Napier, Peninsular War* (4+48 pp.); (vi) *Shelley, Lyrical Poems* (4+31 pp.). (Clarendon Press.) Cloth, 4*d.* each.—The Clarendon Press has done good service to the study of English literature, and its latest unpretentious venture does credit to its reputation. No better editor than "Q." could have been chosen to make these selections; his introductions are models of conciseness and agreeable to read; there are no notes. The more of such selections "Q." edits, the better.

Thoughts by the Way, by Walter Earle (George Allen, 6*s.*), is a book of graceful verse (chiefly spiritual) evidently inspired by the life, works, and death of the great symbolic painter Watts. The book is enriched with Watts reproductions which in some cases are of great merit.

A Book of Comparative Prose. A Book of Comparative Poetry. By W. Macpherson. vii+119 pp. (Blackie.) 1*s.* net each.—Mr. Macpherson's sub-titles, "Typical Poems" and "Typical Prose Essays, arranged for Comparative Study, with Notes and Exercises," sufficiently explain the purpose of his little books. We may well agree with his contention that the comparative method is as sound in the study of literature as in any other, and yet find ourselves wondering whether it was worth while emphasising the matter in this way. To take but two instances: there is far wider scope for comparative study in Mr. Palgrave's "Golden Treasury," and in addition there is an unrivalled anthology of English songs and lyrics; and in Mr. Fowler's collection of essays there is a wider range of subjects and of comparative study as well. To publish a book of twelve essays, restricted to five topics—the theatre, conversation, country churches, Westminster Abbey, and characters—however classical the treatment in each case, is, we think, unduly to limit interest, and to bring into disproportionate relief an occasionally sound method.

An Introduction to English Literature. By H. S. Pancoast. ix+700 pp. (Bell.) 5*s.* net.—The third edition of a book needs few words of comment; it has evidently found its public. The plan of the book is chiefly biographical, and such criticism as is given is on broad, simple lines. We should have thought that a teacher would want something more scholarly and a pupil something more stimulating. But the world contains other people as well.

Mathematics.

Cassell's Elementary Geometry. By W. A. Knight. vii+253 pp. (Cassell.) 2*s.* 6*d.*—The first thirty pages are given to definitions and practical work in geometry; for pupils who are quite new to the study there would probably be considerable advantage in developing these practical exercises more fully, though the material collected in these pages is quite good so far as it goes. The order of development of the theoretical side of plane geometry is in the main that now adopted in accordance with the suggestions of the Mathematical Association. Alternative proofs are frequently given, and perhaps more attention than usual is devoted to questions on areas. The subject-matter of Euclid's first four books is given pretty fully; the treatment of proportion and similar figures is brief, though the more important theorems are included. Pupils who work through the book should obtain a fair knowledge of elementary plane geometry.

The Elementary Dynamics of Solids and Fluids. By W. Peddie. With Sectional and General Examples. By J. D. Fulton. xii+188 pp. (Oliver and Boyd.) 2s. 6d.—Considered as an exposition of the principles of dynamics without the aid of higher mathematics, this book has much to commend it. As regards its suitability for school use it is not so easy to decide. It seems to us that the point of view is too abstract for the schoolboy—even for the schoolboy whose abilities are above the average. For the teacher the book is very suggestive, but the exposition is, in our judgment, too concise for the comprehension of the average pupil, in spite of the illustrative examples, of which there are many, appended to the various sections and chapters. We do not think it to be an easy task to provide in a compass of less than 200 pages an account of the elementary dynamics of solids and fluids, including the kinetics of rotation, hydrokinetics, and the deformation of solids and fluids; at any rate, we do not think that the attempt in the work under notice can be considered successful from the point of view of the teacher of boys in schools. The book contains much that is suggestive for one who already knows something of the subject, but for the schoolboy it is rather disappointing.

Geometry, Theoretical and Practical. Part III. By W. P. Workman and A. G. Cracknell. vii+510–576 pp. (Clive.) 1s. 6d.—Part III. of this Geometry is stated in the preface to contain "the subject-matter of Euclid, Book XI., treated entirely on modern lines, together with an elementary account of the parallelopiped, sphere and tetrahedron." As in the first two parts the exposition maintains a high level, and the book is a distinctly good piece of work. The introduction of a few rules for the perspective drawing of figures is to be commended; we hope that it may soon be found possible to combine a good elementary course of perspective with the teaching of solid geometry. One would expect from the terms of the introduction that a fuller treatment of the parallelepiped (why is the form parallelopiped used?) is given than that of Euclid's eleventh book; as a matter of fact, Euclid gives much more than the book before us. It seems to us a pity that the relations of volume are not considered. No doubt these may be considered as belonging more properly to a work on mensuration; yet they seem to deserve a place in a book that covers the ground of school geometry so fully as this treatise does. The three parts now issued form an excellent work; we hope that the third part may be enlarged so as to include the mensuration of the more common solids.

Brown and Nolan's Practical Algebra, with easy Graphs. By H. Magill. 161+(Answers) xliii pp. (Dublin: Brown and Nolan.) 1s.—This little book is chiefly a collection of exercises with specimen examples of fully-worked solutions. The work begins with easy substitutions, and proceeds through the four rules and factors to simple equations and easy graphs. The second part takes up simultaneous equations, fractions, and quadratic equations with graphs of quadratic functions. The exercises are very numerous and easy, but there is a comparatively small number of concrete applications, outside the problems in equations that involve buying and selling, ages, and the like. On the whole, the book seems to us to be a little old-fashioned, though not at all a bad book on its own lines.

Special Method in Arithmetic. By Charles A. McMurry. ii+225 pp. (New York: The Macmillan Company.) 3s. net.—This volume is one of a series designed for teachers. It discusses the aim and scope of arithmetic so far as it is taken up in schools, and offers numerous suggestions on methods of handling the various topics that form the course. The conditions that prevail in American schools are naturally kept in the foreground, but the discussions are sufficiently general to be read with profit by English teachers. There is not much, so far as we can judge, that is distinctly new, but a good presentation is given of methods that are generally accepted, and useful references to authorities are collected in the closing chapter.

Science and Technology.

Florigene.—The custom which has developed during the past few years of coating the floors of public buildings with oil in order to "weigh" the dust, and thus prevent it from spreading over the room during the process of dusting, has become so common that we have recently examined the preparation supplied by the Dust-Allayer Co., 165, Queen Victoria Street, E.C., under the name of "Florigene," to test its suitability for use in schools. The liquid is supplied in two grades: No. 1 is a brown, rather viscid liquid, practically odourless; No. 2 differs from No. 1 only in containing an antiseptic and smelling of phenol. In order to apply the oil the floor is scrubbed, and after being allowed to dry is rubbed with a special spreader, supplied by the company, by means of which an even coating is laid on the wood; the oil is quickly absorbed, and the room may be used about six hours after the application, although it is advisable to give a longer time when this is possible. Our experience with the preparation has been most satisfactory, and we find that when the next sweeping takes place the dust rolls up in a layer of the oil and can be removed with ease. It is unnecessary to emphasise the value of this treatment in such places as school laboratories and museums where there are glass cases and instruments to be kept clean; we would, however, direct the serious attention of schoolmasters to the hygienic advantages of preventing the rise and consequent dissemination of dust in rooms where a large number of pupils are at work; judging from our own experience, we believe that if the preparation is once tried its use will not afterwards be abandoned. The question may be raised whether the treatment does not increase the risk of fire, and we have carefully considered this point; we find that the liquid boils at a temperature above 360° C. (680° F.), and gives off no inflammable vapour below 300° C. (572° F.); it will not burn without a wick, and extinguishes a lighted match or wind vesta thrown into it; we have therefore no hesitation in saying that schools do not run any additional risk of fire by employing "Florigene." We have noted two slight disadvantages attending its use: the floors become darker in colour and appear to be damp; the oil is also apt to come off upon any clothes brought in contact with it.

Elementary Applied Mechanics (Statics). By Alexander Norwell. xiii+242 pp. (Longmans.) 3s.—This book sums up the author's experience derived from teaching young engineering students in evening classes. In common with other teachers of such students, he has found the insertion of the proper units in the answers to problems a source of trouble, and has laid stress on the unitary system. This system tends to relieve the memory and to develop the reasoning faculties, and has been uniformly followed throughout the book. Amongst others, chapters are given on force, work, moments, friction, machines, centroids, graphic statics, shafts and beams. While the book is well illustrated, the matter is rather unevenly selected, and insufficient importance is attached to the performance of experiments by the student himself to conform with modern views in teaching this subject. We notice on p. 76 a table (from Twisden's "Practical Mechanics")

giving values of the static and kinetic coefficients of friction, and on the same page a remark: "From the table we observe that there are two kinds of friction: static friction . . ., and kinetic friction . . .; and further, that static friction is always greater than kinetic friction." Few teachers would refer a student to a table for this information when he can discover it so easily for himself by experiment even with the most primitive apparatus. There is also a tendency occasionally to place more reliance on the recollection of a formula than of a principle. Thus, on p. 28, a clearly written paragraph on indicated horse-power concludes with the mnemonic

$$\text{I.H.P.} = \frac{2\ \text{PLAN}}{33{,}000},$$

a form which has been productive of many errors. The book contains a great deal of useful information which will satisfactorily supplement a good course of lectures and laboratory practice.

Machine Drawing and Design for Beginners. By Henry J. Spooner. xvi+266 pp. (Longmans.) 3*s.* 6*d.*—In this book the author deals in the first six chapters with the art of making working drawings, and devotes the remainder of the book to details and machine parts. Numerous exercises are given at the ends of the chapters, together with several examination papers of the Board of Education and the City Guilds' Institute. The author wisely lays stress on sketching and on the ability to produce neat and accurate pencil drawings properly dimensioned. There are 751 figures in the book, for the most part excellently and clearly drawn; only occasionally is there a tendency to crowd the dimensions. Features of the book are the very full notes and explanations of the construction of details and calculations regarding them. The book should provide material for a two years' course, and teachers will find it useful in setting many new and interesting exercises for their students.

Science in Daily Life. Edited by Prof. J. R. Ainsworth Davis. Vol. ii. viii+187 pp. (Gresham Publishing Co.) 6*s.* net.—The first volume of this excellent work was noticed in The School World for January last. In the present volume Mr. O. T. Jones concludes his contribution on geology, Mr. J. P. Millington deals with chemistry, and Mr. J. H. Shaxby with some parts of physics. A sectional model showing very instructively the development of the frog by a series of overlapping pictures is published with the volume. Each section of the work gives a good outstanding view of the position of the branch of science surveyed. Thus, in the chemistry section, which occupies nearly 120 pages, Mr. Millington covers the whole ground of the science with what may be termed a preliminary triangulation, and gives references to standard works by which the details may be filled in by students of particular parts. Among the subjects described are the history of chemistry, genesis of the elements, chemical combinations, the electrolytic theory of solutions, chemistry of life, fuel and coal-tar industry, industrial chemistry, and electrochemistry. A vast amount of information is given in very concise form; and the contribution represents in as satisfactory a manner as is possible within its limits the essence of modern chemical fact and theory. The same may be said of the physics, so far as it is carried in the present volume. In the first chapter, for instance, on measurements, we find mentioned Searle's extensometer, the Curie balance, and Boys's quartz fibres; and in the two subsequent chapters short accounts are included of such subjects as Mrs. Ayrton's work on sand ripples, Stansfield's photographs of the black and grey patches on thin soap films, and Callendar's platinum thermometer. It is not to be expected that all parts of the subjects will be comprehended by readers possessing no knowledge of science, but the work will certainly exert a broadening influence upon the minds of all students of science who turn to its pages. Of course, the only true knowledge of natural phenomena and laws is that gained by personal observation and experiment, but such knowledge must necessarily be confined to a narrow field. Side by side with practical inquiry there should be a course of reading intended to impress upon the mind the value of the methods and results of scientific investigators. Such a course is provided in this work, which should be a welcome addition to every school library.

Woodwork for Schools on Scientific Lines. By J. T. Baily and S. Pollitt. Three parts in one volume. (Murray.) 2*s.*—An interesting attempt is made in this volume to co-ordinate the work of the science laboratory with that of the workshop. The models selected are invariably of a kind that will appeal to boys as worth making; all the practical work with tools is based, rightly, on drawings to scale; and there is an abundance of questions on each lesson. The book is attractively produced, and may be recommended with confidence to teachers of the subject.

The new catalogue of apparatus for chemical lecture experiments now issued by Messrs. A. Gallenkamp and Co., Ltd., should prove of great interest to teachers of chemistry. Not only are good illustrations of the apparatus recommended in certain well-known text-books provided, but also helpful descriptions and hints for the performance of experiments. At the end of the list particulars are given respecting compressed oxygen, liquid air, and the flasks and other apparatus necessary for working with them.

Pedagogy.

Principles and Methods of Physical Education and Hygiene. By W. P. Welpton. 401 pp. (Clive.) 4*s.* 6*d.*—This book is not of the "School Hygiene made Easy" type, and is framed upon somewhat unconventional lines; but it is one which not only repays careful study, but is likely to be valued for its breadth of view and for the practical character of its teaching. The first of the thirteen chapters, which accounts for nearly a fifth of the whole volume, is a fascinating sketch of the history of physical education, contributed by Prof. J. Welton, which is made to lead up to the conclusion that "... the most crying need ..." in the education of to-day appears to be "adequate provision for physical training and the full recognition of it as a part of the teacher's work." The rest of the book may be said to be written from the points of view, first, of the physiologist, and, secondly, of the educationist: so that needs and defects, powers and disabilities, their origin, nature and evolution, the problems which they present, and the methods by which these may be most successfully dealt with, go hand in hand as it were. The style is clear, concise, and attractive. Here and there one meets with a sentence which suggests revision in future editions; thus, on p. 225, after a consideration of exercise, including the ill-effects of its excess, we are told that "for full development the need of unrelenting activity of every power presses upon us from the cradle to the grave"; and we are sure that "unrelenting" is not a literal rescript of what the author intended us to read. Again, no clinician could accept the unqualified assertion that "an infectious disease can be accurately diagnosed by the appearance and position of the

rash." Implicit reliance upon such a statement would certainly ensure to a teacher (as to a medical man) disappointment, if not disaster—and precisely in those baffling cases of illness in regard to which such a criterion, were it but available, would be of inestimable diagnostic value. But these are small blemishes in comparison with the volume of sound teaching which is conveyed with reasoned lucidity. Space permits only allusion to the clear manner in which is enforced the harmful folly by which, in modern school life, the eyes of young children are educated to adjust themselves to only two ranges of vision —from 10 to 30 feet in oral lessons, and from 10 to 18 inches in desk work. And, in regard to the evils attending the usual desk postures, and the effect of such remedial exercises as standing in a proper position for work, it is refreshing to read: ". . . School life should not be organised on a plan which necessitates medicinal treatment as an integral part of its methods. . . . The remedy, then, for the evils of desk work is not to be found in adjustable desks and remedial exercises, but in combining with the desk work a suitable amount of physical activity in the playgrounds, gymnasium, playing fields, and workshops." The author is to be congratulated on having achieved so large a measure of success in this attempt to realise the rather ambitious ideal conveyed in the title of his book. A full index adds to its usefulness.

Miscellaneous.

The Frontiersman's Pocket-book. Compiled and edited by Roger Pocock on behalf of the Council of the Legion of Frontiersmen. xx+463 pp. (Murray.) 5*s.* net.—Here is a book in which every healthy youth will find delight, whether he reads it with one or two companions or follows its precepts under the guidance of a master. It is essentially a book for out-of-doors, and from it may be learnt how to make the best use of mind and body under the varying conditions of many lands. Among the vast range of subjects dealt with by writers who describe what they know are camping, map-making, scouting, equipment for various purposes, knotting and splicing, food and its preparation, means of travel, shooting, signalling, hygiene, and the treatment of disease or accident when no doctor is near. The keynotes of the book are self-dependence and discipline, both of which are atrophied by city life. The habit of asking other people for information which can be obtained direct by a little trouble develops a helpless frame of mind never found among men who have to depend upon their own resources. The townsman calls in a policeman, a plumber, a painter, or a doctor when he is in difficulties of one kind or another, whereas the countryman, backwoodsman, explorer, or frontiersman must learn to act for himself in all emergencies. How an alert mind and sound body may be trained and used to the best advantage is shown in this handy little volume, which must assuredly find a place in the trunk of every traveller to distant lands and in the kit-bag of every officer in a cadet corps.

The Schoolmasters Yearbook and Directory, 1909. lxiii+648 pp. (Swan Sonnenschein.) 7*s.* 6*d.* net.—The seventh issue of this invaluable yearbook will be sure of a hearty welcome from every educational worker. Speaking for ourselves, we consult it so often that we wonder work was ever possible without it. Everything of importance about secondary education for boys is to be found in its pages, conveniently arranged for ready reference. Not only is it a schoolmaster's "Who's Who," but an encyclopædia of educational administration and activity. A copy should be in every school.

The Public Schools Year Book and Preparatory Schools Year Book, 1909. lxxxviii+717 pp. (Swan Sonnenschein.) 3*s.* 6*d.* net.—This annual work of reference was a little late in appearing this year, but now that it is available we are able to say that it is the most complete issue which has been published yet. New articles on the universities, on chemistry as a profession, and on qualifying for the Scots Bar are a few of this year's special attractions. The book will be of the greatest assistance to parents.

How to make Our Girls Graceful. By G. E. Kelley and L. Henley White. 52 pp. (Harrap.) 1*s.*—The authors of this manual think that the modern courses of physical drill savour too much of the drill-sergeant, and induce an abruptness of movement which is ungainly. They have therefore devised a series of slow movements to induce gracefulness of deportment and carriage. The exercises are accompanied by music, and look as if they would be effective for a display on prize day.

The History of Music to the Death of Schubert. By Dr. John K. Paine. 304 pp. (Ginn.) 8*s.* 6*d.* —Prof. Paine's book is of the kind which may be useful to students requiring a general conspectus of the history of music from Orpheus to Schubert. It does not manifest much that is luminous in the way of criticism or much that is new or original, but it contains a great many facts and dates, is fairly accurate, and distinctly readable to persons whose interest in the subject is ahead of their knowledge. Since this is the type of student for whose benefit the book was presumably intended, it may fairly be said to succeed in its object. It has a carefully compiled index, and its general appearance and get-up are pleasant and handy.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in* THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.

The Avoidance of Over-exertion in Athletics.

THE Medical Officers of Schools Association has had under consideration the discussion which has lately appeared in the public Press upon races in our public schools.

As a body, the Association may claim an intimate familiarity with the details of every form of exercise practised in different schools, and exceptional opportunities of ascertaining the physical effects produced by them.

From the time of its foundation, now twenty-five years ago, this Association has constantly studied, and has frequently had under practical consideration, the various aspects of school athletics—particularly in regard to the safeguards which they severally call for in the interests of those taking part in them; and it deems it desirable at the present juncture to restate its opinion on the more important points involved, as follows:

(1) A boy's fitness for physical exertion depends upon his physical and constitutional ability, and is not to be gauged merely by his age, which—taken by itself—is often a misleading criterion of strength and endurance.

(2) Every boy should be subjected to a thorough medical examination when he first enters the school. This may reveal obvious defects or disabilities in some instances, and in other cases may show the need for special observation during, at any rate, the earlier years of school life.

(3) Careful observation of the behaviour of the new and younger boys during their ordinary games, &c., and of the physical effects thus produced upon them individually, affords a valuable means of estimating the fitness of each for subsequently undertaking more strenuous exertion.

(4) It is most important that there should be an ample interval (one hour at least) between the time of the previous meal and the beginning of active exercise.

There is clear evidence that the neglect of this elementary rule is responsible for a very large proportion of the evils which have been attributed to over-exertion alone. (All food should be eaten slowly, and thoroughly masticated.)

(5) Special caution is required in permitting a resumption of active exercise to convalescents, particularly after diphtheria, influenza (including "influenzal catarrhs"), rheumatism, and measles, and during a period of rapid growth.

(6) As regards races:

(*a*) Very rarely or never does a runner excel over both long and short distances. His efforts should be restricted to the class of race which observation shows to suit him best.

(*b*) The quarter-mile race, run at top speed from start to finish, involves special strain and risk of serious exhaustion. The entrants for this race should be most carefully selected, and its effects on them carefully observed by the master and the medical officer.

(*c*) Only a few of the stronger and older boys are allowed to compete for the longer distances.

Races for a distance of more than one mile are not very commonly held in large schools, and the number of boys involved is small.

The Association has obtained a considerable amount of evidence from a great many schools upon the results of long-distance races, and it does not find that they entail serious risk, provided that the competitors are selected and watched during practice, with the care and precautions already indicated.

(7) Paperchases, school and house runs, should be distinguished from flat races; but so far as they include the element of competition—and therefore, to some extent, the strain of racing—boys should be selected and grouped for a specified distance in accordance with their physical capacity.

The plan of running all boys—the young and the older, the strong and the less vigorous—together, over the same distance, is not to be recommended.

Whenever, for any reason, such a plan is adopted, special measures must be taken to ensure that the smaller and weaker boys are not called upon for excessive or too prolonged exertion.

(8) Medical examination and skilled supervision are also needed in regard to rowing, boxing, and swimming. Competitions in long-distance diving and in long-distance swimming are dangerous for young adolescents.

(9) In selecting suitable exercise for "delicate" subjects, it should be remembered that hockey is more exhausting than football.

(10) Periodical medical examination and careful individual supervision are equally important in the case of girls engaging in active exercise, especially so in relation to hockey.

(11) The so-called "Marathon Races" are wholly inappropriate for adolescents.

Finally, the Association believes that the application of intelligent supervision and individual observation by masters and medical officers, such as is now carried out in one way or another at our public schools, in relation to most forms of active exercise, is most necessary as a recognised routine, and that, so practised, it reduces the risk of strenuous sport to an insignificant minimum.

Signed on behalf of the Council of the Association,

C. E. Shelly (*President*).

11, Chandos Street, W.

English in the London Matriculation Examination.

Having at one time been concerned in the conduct of the Matriculation English Examination at the University of London, I believe I am able to point out certain misunderstandings that underlie the complaint made by Mr. A. E. Barker in the March number of The School World. The first fallacy is that the standard of every part of every question should be determined by the capacity of the average candidate of minimum age. It must not be forgotten that there are two classes of candidates to be considered—those who look for no more than to get through, and those who hope to gain distinction. All that the pass candidate can reasonably claim is that there should be enough material that is well within his range, with a certain margin to provide for misadventure. As it is understood that the attainment of one-third of the available marks is enough to pass a candidate at this examination; as an option was given in the paper referred to which allowed any candidate to get full marks without attempting more than one of the literature questions; and as in one of the literature questions there was a choice of nine historical novels from which a scene for description might be drawn, while in the other only nine out of the twelve extracts were to be attempted, and in each part of the answer there was a fairly simple element—under these conditions it is pretty clear that only those who had remarkably little general reading could fail to find a sufficiently large loophole to enable them to come out on the right side.

In order to discriminate between the pass and the honours candidate it is absolutely necessary that a certain proportion of the paper should be pitched at a level distinctly above the average capacity. If every part of every question were of a kind that could be fully answered by all who had made reasonable preparation, there would be hardly any rejections, and distinction would have little meaning.

Mr. Barker thinks it unreasonable to expect that young people of sixteen will have read "Esmond" or "Romola," and even doubts whether these books form suitable reading for that age. Now in the first place, any candidate who had read two or three of Scott's best-known historical novels, and was able to give a fairly good description of a scene from one of them, would easily have got through on this question without venturing on the debatable ground of Thackeray and George Eliot. In the second place, it may be suggested that very many people—the present writer would certainly be among the number—would maintain that no more profitable reading than "Esmond" and "Romola" could be prescribed for young people of sixteen or seventeen.

The fear that such a question as that asking for the works from which certain well-known quotations are taken might lead to cramming from a book of selections would only be justified if a tradition were established that such a question would appear regularly, or at least frequently, in the paper. The teachers who prepare for this examination may be trusted to understand their business better. They will certainly not suspect the examiners of so much simplicity as to fall into this trap. Candidates will soon find out that under the new syllabus the only effective way to meet the tests of general reading will be to read as widely and as intelligently as possible from the stores that any wise teacher or adviser will recommend to them as the most suitable material.

X.

I THINK that Mr. A. E. Barker's letter on this subject in the March issue of THE SCHOOL WORLD deserves more consideration than that which the editors have given to it. They say that question No. 7 consisted of two parts. They will pardon me for saying that it did not. They add that they doubt not that candidates completing as many of the quotations as could the M.A. of London in English to whom Mr. Barker refers would have been successful in satisfying the examiners in the question. The conclusion surely is that the matriculation candidate, to be successful, must have reached the standard of the Master of Arts degree.

I have had very full reports from the Leeds, Bradford, Manchester, and Liverpool centres, and in each case there was almost unanimous complaint of the character of the question.

So far I have merely dealt with the editors' paragraph at the conclusion of Mr. Barker's letter; but surely the question that he raises needs treating on other grounds. I believe that there is a very large number of teachers who will feel utterly disheartened at the character of these questions. They know that a boy may have read the books, tales, essays, poems, from which these extracts are taken, may have gained great good from their study, and yet be quite unable to repeat the exact words of the passages. I would go further. In my own long experience I have found that the students who absorb from English books that which is best for life are not those with the verbal memory that tricks out speeches with poetical quotations.

Question 7 distinctly encourages wordy talk in place of noble thought.

Question 6 shows that, despite the efforts of Stanley Hall and Dewey, our examiners do not yet know what a boy of sixteen ought to be reading. They still wish him to repeat, without understanding, the opinions of much older persons about things of which he cannot himself judge for lack of experience as well as lack of sufficient mental development.

The subjects chosen for essays (Question 1) show either that the examiners have not read Mr. Hartog's recent notable contribution to the question of the teaching of English composition, or that they do not agree with his conclusions. In the latter case they are in opposition to the immense majority of those who have read the book. What is the object of setting essays to be written? Are they general information tests, or do the examiners desire to discover whether the candidates can express themselves lucidly upon some subject?

One of the greatest difficulties that teachers have to face—here in the north, at any rate—is the problem of persuading parents to leave their boys at school beyond the age of fifteen. Is this to be wondered at if the boy is to spend his sixteenth year in preparing to answer questions, many of which are so dissociated from real life as those that appear on these examination papers?

Halifax New School. H. R. STARKE-JONES.

[OUR correspondent misrepresents our comments on Mr. Barker's letter. He denies that Question 7 consisted of two parts. If he will consult the paper again he will see that the candidates were asked to do two things, namely: (1) to complete nine out of twelve passages, and (2) to name the poems from which they were taken. We expressed the opinion that candidates who completed the number of passages asked for would have satisfied the examiners on that question, even although they had named none of the poems from which they were taken. To that opinion we still adhere. The conclusion drawn by Mr. Starke-Jones, that "the matriculation candidate, to be successful, must have reached the standard of the Master of Arts degree," is based on a misunderstanding of the passage in Mr. Barker's letter. The M.A. to whom the question was submitted was able to tell where nine of the quotations came from; presumably, therefore, he was also able to complete the nine passages. That is to say, he would have obtained full marks for that question—three times the value that was necessary for a pass.—EDITORS.]

"Elementary Latin."

THE reviewer of my book, "Elementary Latin," in your issue of February last appears to have seen only the pupil's edition. May I direct his attention to the fact that the book is published in two parts, teacher's and pupil's editions? A just estimate of the book can only be formed if the two parts are seen as one whole.

In reply to criticism on points of scholarship, I would point out that, owing to the method followed, I was under considerable restriction in dealing with the text. The grammar throughout has been based on stem formation, and the text written to allow the gradual introduction of the different stems. This has of necessity cramped the treatment of material in the early part of the book. I must urge, also, that classical form at this early stage may be subordinated, and sometimes even sacrificed, to the need of familiarising boys with the use of inflected forms and providing them with a vocabulary. In the second year's work, when a class is reading full text and has acquired familiarity with the uses of inflections, classical form and scholarship are of far greater importance.

While thanking your reviewer for his remarks, I can assure him that I shall be happy to give full consideration to all criticisms in a second edition. F. J. TERRY.

March 9th.

THE second part reached me after the review was in type. If I had had it the peculiarities of reference letters would have been explained.

The chief criticism in point of scholarship is that the answers to questions are very commonly put in the wrong order. There is no reason why this should be done at any stage, and it is as bad a mistake as a mistake in syntax, but of a different kind. The whole style of Latin depends on the order. THE REVIEWER.

A Correction.

MY attention has been directed to an article on "School Plays" by Miss Fanny Johnson in the March number of THE SCHOOL WORLD.

In this article attention is directed to some French plays published by us and written by Miss V. M. Partington, and the remark is made that "their French is not quite impeccable."

As Miss Partington is a distinguished teacher of French, and the plays are largely used in the best girls' secondary schools in London and the provinces, I think I am justified in asking Miss Johnson to quote the sentences to which she refers. C. LINKLATER THOMSON.

(Educational Editor to Horace Marshall and Son.)

IN looking through my article on "School Plays," I see that the expression I used about Miss Partington's plays, "Her French is not quite impeccable," bears a sense which it was not intended to convey.

I therefore beg to withdraw the expression, with regret for the pain I find it has caused the author.

FANNY JOHNSON.

British Association Report on Practical Studies in Elementary Schools.

The council of the British Association has reprinted the report of the above committee presented at the Dublin meeting, 1908. The report contains:

(*a*) A paper read at the Dublin meeting by the chairman of the committee, Sir Philip Magnus, M.P.

(*b*) Report of the subcommittee on "The Teaching of Experimental Science."

(*c*) Detailed schemes of instruction for boys' and girls' schools and for small schools.

(*d*) Lists of apparatus needed for teaching the syllabuses.

I shall be pleased to send a copy of the report to teachers or others interested in this branch of study on receipt of a stamped addressed foolscap envelope.

W. Mayhowe Heller,
Secretary to the Committee.

40, Upper Sackville Street, Dublin.

Historical Story Books.

In a review of two history books by Mrs. Marshall in The School World for March, Prof. Hearnshaw has made a very courageous and timely criticism of the present-day tendency to give our children nothing to nourish them mentally but food which has been digested for them beforehand. As he so ably says, it is, in reality, a rebound from the method of teaching which did not attempt to do anything but cram certain facts into unwilling or passive minds. As a teacher of young children I can second Prof. Hearnshaw's remarks warmly, for I have met those very difficulties in my own actual everyday work. Children brought up on the legendary history-book present a most depressing state of mind to the unhappy teacher who has aspirations, and hopes of giving to the world a race of scientific young historians. For in case there should be some who think my remarks exaggerative, let me describe the situation briefly. One comes to a pupil meaning to present actual facts to him, under as interesting a guise as possible, though telling him nothing which is not true or relating to the time of which one is speaking. One finds his mind a wild, parti-coloured mass of Camelot, Canterbury Pilgrims, and Robin Hood, and what is particularly pernicious is the entire want of chronology which this system produces.

Why do people confound these stories with history? Beautiful stories like those of Arthur should be read, but not as history. I have been driven to take Malory's Arthur, in judicious selections, as literature with my class of boys to grind into them the difference between legend, however beautiful, and fact. I would say, though I realise at the risk of being thought hopelessly antediluvian in ideas, that until children are old enough to be told actual facts they should hear fairy stories such as the majority of their grandmothers and grandfathers grew up on. Surely "Jack the Giant-killer" is for all time! The books for children which come out yearly are legion, with pictures and easy words and what not. Their imagination has no chance of working. Everything is given them in a peptonised form. The final blow comes with the "Children's Encyclopedia," and the timid question from a poor tired little brain overcharged with bright colours: "How long is the railroad to the sun, really?" One gasps with helpless bewilderment and tries to explain, but the harm is done, and those facts which are so precious to a teacher when he has the chance of presenting them fresh to the child have been tarnished and the bloom has gone. The boy finds Camelot is not on the map, that it is likely Arthur never lived, that there is no railroad to the sun, and that the people in Mars do not visit us often. All this is very hard on teacher and pupil alike, and the fact it reveals is that the modern child is overdone with colour ready splashed on by grown-up people. Far better that he should play with bits of wood and imagine them to be Jack and the Giant, and thus exercise his brain easily and naturally, than that he should have presented to him all the splendid stories of Greek and Latin mythology, of Chaucer and of Shakespeare, in tabloid form, since he could not take them as administered by their original authors. They get all the stories of literature with no effort and without any of the literary beauty of the original, and we come back to the method which Prof. Hearnshaw describes so pithily as "French without tears and history without dates." The moral and mental effect is bad, for, as he says, difficulties must be faced in after-life, and unhappy the child whose mental discipline only begins when he leaves school.

Dorothea Trotter.

Aberystwyth.

Quantitative Chemical Experiment.

I have to thank those readers of The School World who replied to my request for information. Many substances have been suggested, but only two or three that are quite suitable. These are recrystallised barium chloride and ferrous and ferric oxalate when pure and dry. Such substances as the carbonates of magnesium, copper, &c., are never obtained in the pure state, being always mixed with more or less basic carbonates; and so an experiment has to be performed by the teacher to find the exact percentage loss. Magnesium sulphate crystals are unsuitable, as the amount of water present is not constant and the substance decomposes slightly on heating; sodium bicarbonate is another substance containing a variable amount of water. One correspondent refers to the conversion of copper into copper sulphide by heating it with sulphur; he did not mention that if the composition of the product is to be constant it must be heated in a current of coal gas or hydrogen; also the presence of so much sulphur dioxide in the laboratory is not pleasant. Experiments with compounds of lead have also been mentioned; these do not give satisfactory quantitative results, as the changes in weight are small compared with the weight of the substance used.

J. Hart-Smith.

Battersea Polytechnic Secondary Schools.

The School World.

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A Monthly Magazine of Educational Work and Progress.

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FURTHEST SOUTH.

By B. C. WALLIS, B.Sc., F.C.P.
The County Secondary School, Holloway, London, N.

FOUR centuries ago news came filtering through to Western Europe that a new continent had been discovered; about a century and a half ago this was repeated, and within the last ten years the civilised world has gradually come to the conclusion that the South Polar region forms a sixth and last continent—Antarctica. Not the least noteworthy of the explorations which have contributed to this result has been the Shackleton Expedition, which announced its main discoveries in brief outline a few days ago. The discovery of carbonaceous matter in connection with limestone—which confirms the discovery of carbonaceous matter in connection with sandstone made in 1903—the additions to our knowledge of the coast-line of Victoria Land both to the south and to the north, the exploration of the land surface of Victoria Land away to the south and inland to the west—all these facts give cumulative and confirmatory evidence as to the existence of a polar continent; while, finally, Lieutenant Shackleton must have seen nearly, if not quite, as far as the Pole itself in his last look on January 9th, 1909, over the frozen plain extending with no intervening mountains away to the south.

A comparison of the maps in the accompanying figures will bring out the essential contrasts between the regions in the neighbourhood of the two Poles, especially if one considers the question of approach from Britain in the north and from New Zealand in the south. The three northern continents make a land rim round the northern basin which reaches to latitude 70° N., and there is little land between this rim and the Pole; consequently each attack on the Pole must be over ice which is not fastened to land but is in a constant state of drift. The approach from Britain, however, is comparatively easy, since the pack ice is limited to the Arctic Ocean and since the summer isotherm of 35° F. approaches more nearly to the Pole than in the southern hemisphere. The map shows roughly the position attained by the last three expeditions—Nansen (86° 14′ N.), Abruzzi (86° 33′ N.), and Peary (87° 6′ N.)—and it will be noticed that these places occur on the less inclement side of the Pole. The ease of approach is made more manifest still when one considers the fact that 300 years ago Hudson penetrated within the circle of latitude 80° N., and again in the eighteenth century, while Cook was being held by the ice in the neighbourhood of the Antarctic circle, Phipps penetrated to within 10° of the North Pole.

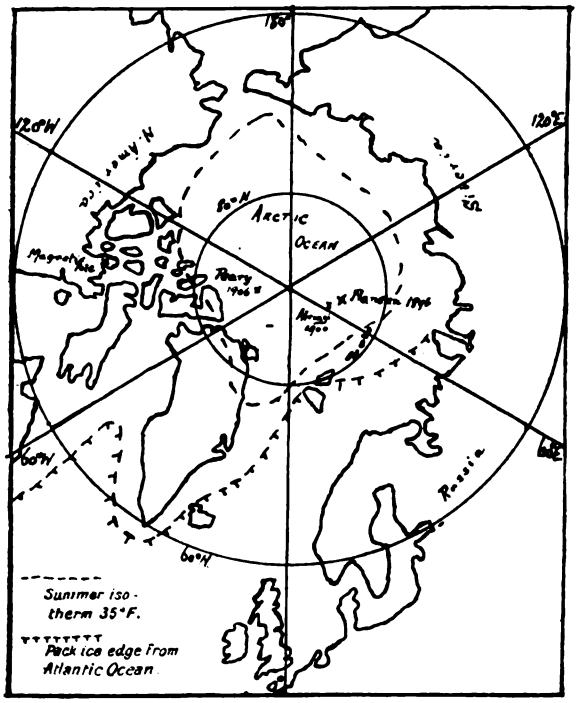
The delay in attaining such high latitudes in the southern hemisphere has been due to the difficulty experienced by every navigator in penetrating the pack ice which is usually met about latitude 66½° S. Ross, with the *Erebus* and *Terror*, succeeded, in 1843, in discovering the open water to the south of the pack now known as Ross Sea. Since his day, especially within the last few years, the use of steam as an auxiliary to sails has enabled the later explorers to reach Victoria Land with greater ease, although the stormy nature of the southern oceans between the latitudes 50° and 60° S. still makes navigation dangerous, as Captain Scott found on his voyage back to New Zealand in the *Discovery* after the spare rudder had been fitted. The map shows the position reached by Borchgrevink (78° 50′ S.) in the *Southern Cross* Expedition, Scott (82° 17′ S.) in the *Discovery* Expedition, and Shackleton (88° 23′ S.) in the *Nimrod* Expedition; and the fact that these places were all reached from Ross Sea seems to suggest that this approach is comparatively the easiest way to Antarctica.

One other comparison between north and south is important, and that shows the more extreme conditions of climate encountered in South Polar work. The maps show the difference in temperature during the summer; and, in addition, it must be noticed that the Arctic Ocean area is not so cold as Northern Siberia, while in Antarctica one of the constant features lies in the frequency of terrific blizzards from the south, against which it is impossible to travel and in which it is practically impossible to see. Sledge parties have had to remain inactive in their tents for as long as nine days at a stretch—so that there is no polar calm extending over the circle of latitude

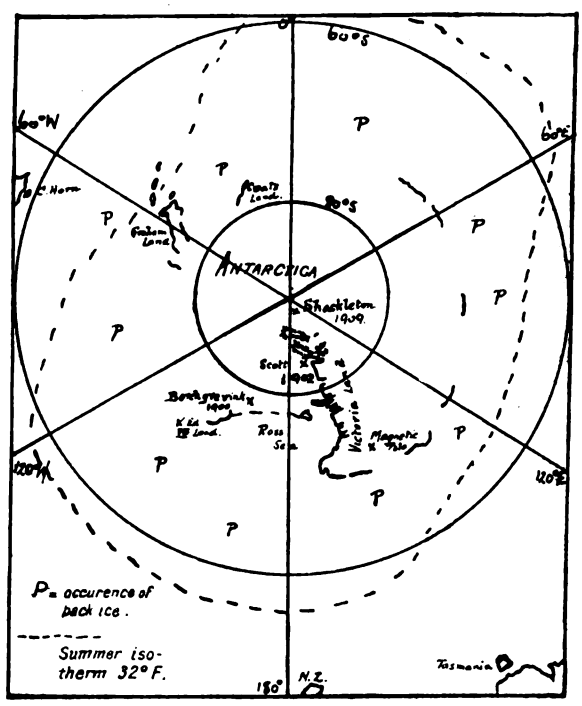
80° S., as there is over circle of latitude 80° N. The greater difficulties attendant upon South Polar work make it all the more noteworthy that the record for nearest either Pole now goes to Lieutenant Shackleton, who has been 77 geographical miles nearer to a Pole than anyone else, and 366 geographical miles nearer the South Pole than he reached in company with Captain Scott and Dr. Wilson in 1902.

This latter fact alone would constitute for the Shackleton Expedition a remarkable achievement, but when a comparison is made between the whole work of the last two South Polar expeditions, it becomes quite clear that Lieutenant Shackleton gained tremendously from his experience in 1902–3. He went furthest south then, and found that dogs were a failure for long

A detailed comparison of the distances covered by the two sledge expeditions towards the Pole shows that even when the later expedition was without the help of the Manchurian ponies, it travelled faster than the earlier even over ground covered by both parties, and this shows, apparently, that four men can manage better on such a journey than three. The average speed was also greater, since, in 1902–3, 960 statute miles were covered in 93 days, and, in 1908–9, 1,708 statute miles were covered in 126 days. In both cases the work was done on starvation rations. Each party seems to have had good fortune in finding the depôts in which food had been cached, and each party suffered from illness—scurvy in 1902–3 reduced Shackleton so greatly that he had difficulty in merely walking the greater part of



The North Polar Ocean.



The South Polar Continent.

extended expeditions over the southern ice; he therefore used Manchurian ponies, with the result that he covered the distance to Scott's furthest south in twenty-three days instead of in fifty-nine days. He appears also to have kept further away from the coast-line in his southern sledge journey, and thus to have found an easier travelling surface over the Barrier ice. Not until he attempted to reach the land surface did he resort to the heart-breaking relay work with the sledges—work which means travelling three miles to reach one mile further south—and then he seems to have had less of this work to do than arose in the former expedition. He does not seem to have found the great chasm where the Barrier ice touched the land edge, which prevented the earlier travellers from journeying on Victoria Land at all.

the return journey, and dysentery in 1908–9 attacked all four men, and made the latter part of the journey one of great difficulty to Marshall. Both partes accomplished a great deed in the face of tremendous difficulties.

In 1903–8 and in 1908–9 sledge expeditions were made westward on to the continent from the base in McMurdo Sound. The earlier journey lay over the Ferrar Glacier, and resulted in the discovery of a fairly level surface to the west of the coastal mountains, and to the discovery, at longitude 154° E., that the magnetic pole lay due north. The later journey took a more northerly course, climbed the glacier in the neighbourhood of Mount Larsen, and pressed inland over a similarly level surface to locate the magnetic pole in longitude 154° E. and latitude 72° 25′ S. In the earlier case the abnormal

winter conditions of 1903 had kept the ice hard in McMurdo Sound, and Captain Scott found little difficulty in crossing from Ross Island to the mainland and back again; but in 1908 the ice on Ross Sea was more broken, with the result that the western sledge expedition was unable to get back to the winter quarters over the sea ice along the edge of Victoria Land, and the party had to be rescued by the *Nimrod*. They did not attempt to travel along the mountainous coast-line, which would have been a tremendous task, as is shown by the difficulties encountered by Mackintosh, who attempted to travel more quickly over the ice in carrying the mails from Cape Bird to Cape Royds, and eventually reached that spot on January 12th, a week later than the *Nimrod*. In this case also the later expedition seems to have been able to accomplish greater things than were possible in 1903.

With these two sledge expeditions the parallelism between the work done seems to end, for, while Captain Scott explored the front of Ross's Ice Barrier, discovered King Edward VII. Land and the Alexandra Mountains, penetrated beyond the Barrier to a point further south than was reached by Borchgrevink, and later Lieutenant Royds made a sledge journey to the south-east over the Barrier ice, in the later expedition a party ascended Mount Erebus and investigated the conditions of the two craters. Lieutenant Shackleton also escaped the troubles which beset Captain Scott with the *Discovery*, which was held in the ice and made an enforced stay over the second winter. The *Discovery* was fast in the ice, and two relief ships were sent—in the first summer the *Morning* alone, and in the second summer the *Morning* and the *Terra Nova*. These troubles were not met by the *Nimrod* more than slightly, as she was sent back to New Zealand for the winter, and was only held by the ice for a short time in January of this year. Consequently, the western sledge expedition was not forced to curtail its journey in order to get back in time to help free the ship from the ice, as happened to Captain Scott. The *Nimrod* picked up the three sets of sledge travellers and quickly made her way out of the danger zone towards New Zealand. This practice of sending the ship back to New Zealand for the winter was also adopted in the case of the *Southern Cross* Expedition, but the winter quarters were established near Cape Adare, at the northern end of Victoria Land—by no means so useful a base for exploration as Ross Island, which is about 500 miles further south.

Until the scientific results and the fuller details of the Shackleton Expedition are forthcoming, it will be impossible to arrive at a just conclusion as to the value of the work done, but this superficial sketch will be sufficient to indicate the lines along which advance seems to have been made. Finally, for school purposes one must rejoice in the public enthusiasm which Lieutenant Shackleton's cablegram has aroused, for it has enabled the pupils to connect their study of geography within the school walls with the real world outside. Although the conditions of Victoria Land are an extreme form of the climatic conditions of the cold deserts, yet the pupils have been able to obtain for themselves a start in collecting first-hand information of those portions of the earth's surface, and from this beginning, made as a result of influences independent of the teacher, it has been possible to extend their knowledge and stimulate their enthusiasm by the comparison between the conditions at the two Poles and by the comparison between the work done by the two expeditions. The stimulus due to great achievements is of untold value in making the geographical story real and vivid.

FIRE APPLIANCES FOR USE IN SCHOOLS.

By SYDNEY F. WALKER, R.N.
Consulting Engineer.

IN the issues of THE SCHOOL WORLD for April and July, 1905, Mr. Carter discussed the question of the organisation of a school fire brigade, and the methods of dealing with fires, by the aid of the brigade, was explained. In the present article it is proposed to describe the appliances that are available for extinguishing fires in their very early stages, and for minimising the damage to life and property that ensues. It is well known that in all cases of fire the critical period is the first quarter of an hour. Many a fire that would have been very dangerous indeed, and would have led to the destruction of a large amount of property, and possibly to the loss of life, has been extinguished within that period, the damage being thereby rendered comparatively small. Further, it is not too much to say that the first few minutes after the ignition of some combustible material has taken place are of the greatest importance. We are all of us familiar with cases where light curtains or similar substances have been ignited by accident, and have been extinguished by the prompt action of those near, and where the damage has been confined to the loss of the curtains, and possibly to a few burns on the hands of those who extinguished them. In many cases, however, it is not possible to take the prompt action referred to, it may be by pulling down curtains and stamping out the fire; but it is possible to bring portable apparatus into use that will extinguish the fire, if it is seen within a few minutes, providing that the appliances are ready to hand.

There are a number of portable appliances on the market, the working of which may be divided into two groups. In one form, water only is employed, and in the other, water charged with chemicals that are designed not only to extinguish the fire, but also to coat the charred mass with a substance that will prevent re-ignition. One of the appliances in which water only is employed is the familiar hand bucket that is hung in a convenient spot, and should be kept filled at all times, the bucket being constructed of a light

waterproof material, the idea being that a bucket of water may be seized and quickly thrown upon the fire. Buckets of this kind may be multiplied to any extent, and should be of considerable service, providing that they are always kept full.

An extension of the bucket system is the portable tank, which is made in various forms, and can be placed in convenient, out-of-the-way positions, and to which a hand pump, hose, and

Fig. 1.—Portable tank, with pump and nozzle, in action. Made by Messrs. Merryweather.

nozzle are attached. The portable tank with hand pump has the advantage that it contains a much larger quantity of water than the bucket, and that the stream of water can be directed upon the fire from a much greater distance and to much greater effect than water can be thrown from a bucket. It has the disadvantage that it takes up a certain amount of room, and that it is not always convenient to find out-of-the-way spots to place it. Figs. 1 and 2 show apparatus of this kind, made by Messrs. Merryweather,

Fig. 2.—Another view of Merryweather's portable tank and pump, and of their hand buckets.

in use. This apparatus is sometimes arranged to have its pump worked by an electric motor, in place of by hand; and where the school is fitted with electric light this is a very convenient arrangement. Plug contacts similar to those fixed for portable lamps are placed in convenient positions, and the portable fire appliance has a flexible cord and a contact piece which, when plugged in, carries the current to the motor and starts the stream of water immediately. Another modification that has been arranged is to use the force of the water from a lavatory tap to drive the stream upon the fire instead of working the pump by hand. Wherever power of any kind can be applied to pumping the water, in place of having to drive the pump by hand, a great advantage is obtained, as those directing the operations have their hands free to guide the jet of water and to clear objects out of the way.

Chemical Appliances.—The chemical appliances are all constructed upon one principle, though the arrangements vary with the ideas of the different inventors and manufacturers. In all of them there are two chemicals, usually sulphuric acid and bicarbonate of soda, arranged in a vessel with water, there being also a hose and nozzle attached. The apparatus is made in different forms and different sizes, but in all cases the two chemicals are kept apart in ordinary circumstances; and when required to be used against a fire, they are brought into contact by various means, the result being the formation of a considerable body of carbonic acid gas; the pressure of the gas causing the water, charged with carbonic acid and with sulphate of soda, to be forced violently out through the nozzle. The stream of chemically-charged water, being directed upon the seat of the fire, upon the burning wood or other substance, extinguishes it, and, as explained above, provides a coating of sulphate of soda upon the previously burning mass, which tends to prevent its re-ignition.

Fig. 3.—New Era chemical fire extinguisher. It is operated by giving a smart blow on the knob shown at the top of the apparatus.

The apparatus is made in all sizes, from that suitable for carrying in the hand up to sizes similar to the portable water tanks described above, carried on wheels. For large schools, also, larger forms, that can be kept in outhouses and brought out to any part of the building outside, are made. The smallest form of chemical apparatus is the well-known bottle, which looks like one of the forms of mineral water and is familiar to theatre-goers. They are

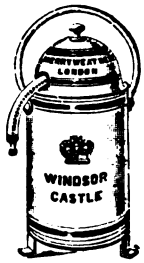


Fig. 4.—A chemical fire extinguisher made by Messrs. Merryweather.

usually placed in racks in the theatre corridors, at the back of the pit, and other places. The arrangement of the chemicals in these bottles is a little different from that in the larger forms, but the result is the same, and the operation is very similar to that of flinging water from a bucket on to the fire. The bottle is to be grasped by the neck and thrown violently into the midst of the burning mass. It must be thrown with sufficient violence to break, the result being the formation of a quantity of carbonic acid gas and sulphate of soda, the water in the bottle being charged with these substances and spreading over the burning mass.

In another form, which looks something like a large telescope, a long cylinder of small diameter, which is suspended from a hook in a convenient position, the instructions are to seize the cylinder and dash it violently upon the fire. In this case the action is by means of a powder, which is liberated by the breaking up of the cylinder, and is claimed to extinguish the flames and prevent re-ignition. The Kyl-Fyre Co., of 12, Elms Buildings, Eastbourne, make an apparatus of this kind. The cylinder is pulled sharply away from the hook it is suspended from, the cap of the cylinder being removed in the process and the contents of the cylinder dashed into the fire. The hotter the fire, the more vigorous, it is claimed, is the action. Other forms of chemical portable appliances are made to carry on the back by means of armlets slipped over the shoulders, and to be carried in one hand, while the nozzle is directed by the other. In these forms the sulphuric acid is usually contained in a bottle, separated from the bicarbonate of soda, and when the apparatus is to be used, the bottle is broken by a violent blow upon a rod, the head of which projects through the top, the blow being given by a spanner carried on the apparatus itself, or by any convenient object. Figs. 3 and 4 show apparatus of this kind. The breaking of the bottle liberates the sulphuric acid, and allows it to mix with the bicarbonate of soda in the water, carbonic acid being generated as described. In one form of portable chemical apparatus, the two chemicals are brought into contact by inverting the cylinder in which they are contained, the remainder of the action being the same. Fig. 5 is an apparatus of this kind.

FIG. 5.—The Protector chemical fire extinguisher. This is operated by inverting the apparatus, standing it on the ring shown at the top.

It is claimed that a great many serious fires have been averted by the use of these appliances, and there can hardly be any doubt that the presence of one of them in the neighbourhood where the fire breaks out, the appliance being quickly put into operation by someone who has a cool head, should give very favourable results. One caution must be given in connection with the use of all appliances of this kind, viz., that the stream of water, whether chemically charged or not, should be directed, not at the flames, but at the substances from which the flames are issuing. The object to be attained is the cessation of combustion.

AUTOMATIC APPLIANCES.—Another form of apparatus that is being gradually applied to buildings of almost every kind was worked out originally, the writer believes, for cotton mills, and should be of great service in schools. So far, he believes, it has not been introduced into schools in the United Kingdom, but it has been applied in America. In America, where heating appliances are far more necessary during the cold winter months than in the comparatively mild climate of the old country, many very serious fires have occurred at some of the large schools and colleges, and they have led to the adoption of automatic appliances to a very large extent. The automatic appliances are designed to do, on the outbreak of a fire, what anyone on the spot, with a cool head, could do with one of the portable appliances that have been described. On the outbreak of fire, and when the temperature at any part of the building in which the automatic appliances have been fixed rises above a certain prearranged degree, a valve opens automatically, and a fine but powerful spray of water is directed upon the burning substances.

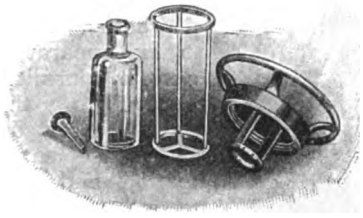


FIG. 6.—Parts of the apparatus shown in Fig. 5.

The arrangement of the apparatus, of which there are several forms in use, is as follows. Pipes are fixed on the ceilings of every part of the building that is to be protected, very much in the same manner as gas pipes are fixed where gas lights depend from the ceiling, and at definite distances along the pipes small valves, which provide the spray of water, are fixed. The valves, one form of which is shown in Fig. 7, are brought into operation by the melting of a small quantity of solder. When the spray is not issuing, the apertures through which it will issue are closed by valves of various forms, according to the ideas of the different inventors, the valves being kept in their places by two strips of metal held together by solder. Solder can be arranged to melt at any temperature, within comparatively wide limits. As usually arranged, it melts at 155° F., very much below the boiling point of

water. When a fire breaks out, the temperature in the neighbourhood rises, the air becomes heated, the hot air rising to the ceiling, the solder melts, the valve opens, and a spray follows, very much on the lines of a shower bath. The pipes fixed in all the rooms to be protected are connected to the main service pipes, which are again connected to the town water service, where the school is in a town, or to a supply of water on the roof, or, as arranged at a large school in America, to a tank at a little distance from the school. It is necessary that either the water shall be under pressure in all the pipes to which valves are fixed, or that, as an alternative, there shall be a pressure of compressed air. The compressed air arrangement is rather more complicated, but is designed to protect the service from the action of frost. The release of the air pressure, when the solder of any valve melts, brings the water quickly to that point. It is usual at the same time to arrange that the pressure of water operates a large alarm bell.

Fig. 7.—Valve of a "Sprinkler" made by Messrs. Mather and Platt. The strip shown in the centre is held together by solder. When a temperature of 155° F. is reached, the solder melts and the valve the strip holds in place opens.

Whether it be advisable to fix apparatus of this kind in dormitories and class-rooms, there can hardly be any doubt that the basement, where heating and other appliances are fixed, and where the danger of fire is considerable, should be protected by them. That is the feeling in America.

An extension of this is what is called the drenching system, arranged to screen buildings which are not on fire from other burning buildings in the neighbourhood. It will be remembered that where buildings are close together, as in all large towns, the danger of fire arises not only in each building itself, but in every neighbouring building, and sometimes from buildings at a comparatively large distance, if and when strong winds are blowing from that direction. The drenching or screening system consists of pipes placed along the parapet, or the edges of the roofs of the buildings to be protected, and when danger arises a sheet of water is caused to descend from the pipes, through valves arranged for the purpose, the sheet of water forming, it is found, a perfect protection against the flames, flying sparks, &c., from burning buildings in the neighbourhood.

Alarm Signals.—A useful adjunct to any system of fire appliances is an arrangement of electric fire-alarm signals. Electric fire-alarms are arranged to operate by the aid of heat, just as the automatic spraying appliances do, but in place of opening valves by the melting of solder the heat is made to close electric circuits, by the unequal expansion of metal springs, in the well-known manner. The buildings to be protected are wired, very much as they are for electric bells, and with the same kind of wire. In place of pushes, the expanding spring contacts, contained in cases, are fixed in different spots on the ceiling. The whole system of wires is connected to a galvanic battery, and may be connected to one large alarm bell, or to an alarm bell in each dormitory. There may also be an indicator, similar to that used with electric bells, placed, say, in the headmaster's house, or wherever may be convenient, showing where the fire has broken out.

It should be easy, in connection with a system of fire-alarms of this kind, to arrange a system of fire drill. Thus, on the first sound of the alarm bell, supposing one to be fixed in each dormitory, or that the main bell is sufficiently loud to be heard in each dormitory, all the students are to get up and dress, and fall in, in their dormitories. It can easily be arranged to give a second and further signals, from wherever the indicator is placed, instructing the students to march out of their dormitories, under charge of their monitors or masters, or to go to bed again.

Appliances for Rescue from Upper Stories.—The articles which appeared in The School World in 1905 left very little to be added about rescue from upper stories. It may be mentioned, however, that in addition to ropes for lowering inmates of upper stories, the leading makers of fire appliances also manufacture chutes, and various arrangements, such as hammocks, chairs and ladders, that are easily and quickly applied, providing that they are at hand.

THE REORGANISATION OF SECONDARY EDUCATION IN SWITZERLAND.

By A. J. Pressland, M.A.

Fifteen years ago, Dr. Finsler, of Bern, published an inquiry into the state of the secondary schools of Switzerland. Important changes were pending, and Dr. Finsler was anxious that the study of the classics should not suffer. In the interim various Cantons have recast their schemes of secondary education, but the Federation remained dormant until about two years ago, when the regulations for the medical preliminary examination were revised. About the same time the secondary schools of the largest town in the Federation, Zürich, were overhauled. The process of reconstruction is a never-ending one, but here we have three landmarks to guide us in an attempt to determine the tendencies and aims of secondary education in Switzerland.

The problem is one of great complexity, for within this small area are twenty-five sovereign States, united, indeed, by a Federal Constitution, but so jealous of their independence that they grant authority to the Central Government with the greatest reluctance. Their systems of education present many differences. This is only natural, for what would suit Basel town, with a population entirely urban and mostly bilingual,

would be out of place in the Grisons, where three languages divide a rural population. In this diversity of circumstances lies the real interest of the problem. Experiments have been necessarily on such a small scale that Switzerland has not received the credit she deserves, though the organiser confronted with a new problem looks at once for guidance to a land which is the educational laboratory of Europe. In the primary schools Switzerland is discussing the questions that press for settlement everywhere: the size of classes, the extent of the curriculum, and the payment of teachers. The general opinion is that children are brought to school too young, that the syllabus is overcrowded, and the classes too large. A desire is manifest to give more care to the child under school age and to reduce the work during the first year of attendance. It is recognised that not every child joining the primary school is going to be a poet or a journalist, and so more importance is attached to love of work than to ability to spell correctly.

Normally, the Swiss child arrives at school about the age of six or seven, and spends from four to six years in the primary school. The Mannheim system of grading school children according to ability is not adopted, though modifications of it may be recognised. What most concerns the secondary school is that the same syllabus of instruction must be followed in all schools of a Canton, private and public alike, so that pupils begin their secondary education on the same basis of attainments.

When a child leaves the primary school three courses, as a rule, are open to the parent. He may send his child to a secondary school, to a higher grade school, or to the extended primary school. In the first two of these a second language is taught, and the prestige of knowing a second language fills the higher grade schools with pupils below the proper standard of attainments. This became so apparent lately in Bern that a committee of fifteen teachers was appointed to report on possible remedies. This committee found that the schools were overcrowded to the extent of about 30 per cent., and suggested that:

(1) The examination at the end of the primary-school course should be replaced by a probationary period at the new school.

(2) A second language should be taught to the better pupils of the extended primary school.

In other words, that the extended primary school should be subdivided so that the higher grade schools may be relieved of their heavy weights. As soon as this is done the relations between the higher grade and the secondary schools, acute enough already, will demand consideration.

The higher grade school is asked to meet too many requirements. It has to be the upper division of the public school, the lower division of the secondary school, and the feeder of the training colleges. Hampered by its connection with the primary and thwarted by the secondary schools, its position has given rise to friction. Differences of curricula account for some of it: the higher grade has an extensive curriculum and the secondary school an intensive one. Differences of aim are another disturbing factor: by the time the higher grade pupil is earning a living the secondary pupil will be still attending classes. But the main cause of discontent is the question of training. Until within the last few years the secondary-school teacher got his training where he could. The higher grade teacher, after completing a full course of primary-school training, had to attend a university, where his compulsory course often rendered graduation impossible.

The world-wide antagonism between directive and productive forces is thus not confined to the material interests of capital and labour. Here we have, on one hand, men who have acquired skill seeking to gain knowledge, and, on the other, men of scholarship seeking to gain skill. That two classes whose needs are so complementary should be at discord shows some grave fault. It seems to arise from the fact that one set of men never get to know the other. The student in training is so overburdened with work that he regards scholarship with the sullen indifference that accompanies defeated ambition, whilst the scholar has had such a surfeit of examinations that he views further training with scorn.

Of the remedies proposed the following may be noticed:

(1) To connect all secondary schools directly with the primary school.

(2) To give primary-school teachers a full course, as pupils, at a secondary school.

(3) To promote the abler higher grade teacher to the secondary school.

(4) To give all secondary-school teachers a pedagogic training.

(5) To introduce *Fachunterricht* into the higher grade school.

The last provision is not a step in the direction of early specialisation. The fetish of a general education does not hold Switzerland in thrall as it does Austria. In fact, three steps may be recognised in Switzerland: general education up to the age of twelve or so, directed education during the period of secondary-school attendance, and specialised education at a university.

When discussing secondary education proper one must remember that the Central Government can exert influence on classical study only through the medical preliminary examination, for which Greek is not compulsory, and on the modern schools only through the entrance examination to the Polytechnic. In this absence of driving power Finsler saw the chief failure of secondary education. The standard of the schools is so different that it is found hard to transfer a pupil from one school to another, and harder to classify the finished products when they arrive at the university. To secure more cohesion, Finsler proposed to give the Federation greater power and to permit it to prescribe a standard for all scien-

tific studies and not for medicine alone. Though Finsler is thoroughly dissatisfied with the state of classical study, believes that the training of the memory has been neglected, deplores the insufficiency of time given to Latin, and declares that optional Greek has been the ruin of the *humanistisches Gymnasium*, on several points he is a noble pioneer. He will have nothing to do with the vague "spirit of the classics." He calls it a mere pretence to suppose that Latin and Greek are of use to the medical man. The country practitioner teaches his wife to make up his prescriptions, and she gets along quite well with her mother-tongue only. Then he does not agree that pupils are naturally divided into those with classical ability and those with scientific ability. He believes that the able pupil would do equally well in either branch. Finally, he wishes to see the university open to all who can profit by attendance.

For all this, Finsler belongs to the old classical guard. He remembers the time when the secondary school prepared for two professions only—the Church and the Bar. It was an age of harmony when the goal was always in sight and the teacher could perform the work of a class entirely by himself. But the ideals of the grammar school have vanished for ever, and the paymaster demands that education shall be adapted to the needs of society.

In a town like Basel, Finsler's proposals can readily be put into practice. A Gymnasium with literary and "real" sides, an Oberrealschule, and a commercial school can be organised in direct communication with the primary school. Each secondary school would have a seven years' curriculum, and Greek would be a compulsory subject in the Literar-Gymnasium. Such an organisation was foreseen in the regulations for the leaving certificate examination of Bern town. In Bern and Basel conditions are favourable; let us consider Zürich, where the schools supply the needs of a large country district as well as those of an urban area.

Ten years ago the Kantonsschule of Zürich town was divided into a Gymnasium and an Industrieschule. The former took boys from the age of twelve for a seven years' course. In the first year Latin was begun, in the second year Greek, and in the third year French. At the end of the second year a boy could be transferred to the Industrieschule, which took boys of fourteen for a five years' course preparatory to polytechnic study. In this school neither Latin nor Greek was taught. It was divided into two sections: a technical side and a commercial side. Some pupils came from the Gymnasium, but the majority were promoted from the higher grade school. Commercial pupils left, as a rule, at the age of sixteen, but a few remained until eighteen.

In the new organisation the Gymnasium has been divided into two parts: a literary side and a "real" side, with a common lower division of two years in which Latin and French are taught. In this way the choice of Greek, or an equivalent, has been postponed until the pupil is fourteen. The Industrieschule has also been divided into two parts: a Latinless Oberrealschule and a commercial school, for each of which the higher grade school still serves as foundation, so that, as before, the Industrie pupil has to make transfers at the ages of twelve and fourteen.

By this arrangement the advocates of Greek have gained. They secure the best pupils, and are not troubled by "options." The Oberrealschule has suffered. Competition with the Real-gymnasium has deprived it of social prestige, and the commercial school is frankly more utilitarian. Its staff finds that it takes six months to lick the new arrival into shape, and this seems to point to its being the Cinderella among the schools. As yet the Oberrealschule has not found its *métier*, which is to be the extended higher grade school. When this possibility has been recognised much of the antagonism between the higher grade and the secondary schools will disappear.

It is interesting to note that in German-speaking lands commercial schools fall into two classes, divided locally by a line through Frankfurt and Leipzig. North of the line the practising bureau plays a small part in instruction, teachers have rarely a practical knowledge of commerce, and pupils leave to become teachers of commercial subjects, law, or economics. South of the line the practising bureau flourishes, teachers are hard to procure, for knowledge of practical work is demanded, and pupils pass out into business houses. Of 280 pupils in the Zürich Handelsschule, 190 are in the two lower classes and 90 in the three higher classes, the majority thus leaving at the age of sixteen. Those who complete the whole course can pass on to the university and graduate without a knowledge of Latin or Greek. This sign of respectability has done much to ensure the success of the school, for the university degree in commerce is no "soft option."

So far we have discussed instruction in Swiss schools. What are the schools doing in the way of education one will ask. There is much talk about civic instruction, drill and military exercises are compulsory, and there are at least two pioneers of moral instruction of eminence. Yet there is something wanting. At times I have thought the unit of corporate ambition, the Canton, too large. But republican sentiment does not favour a reduction. In fact, our gradation of family, school, city, and the State is not accepted. Republican principles are sometimes too rigidly applied. Thus, in one girls' school the pupils chose a distinctive badge and ribbon, and were ordered to discard it. In Basel town a more successful attempt is being made to promote corporate life in small communities. There are two paying holiday homes for pupils, one in the French Jura and the other in the Italian Alps. In other places older pupils are found helping in the work of the holiday colonies and collecting funds for the

school journey, a kind of *mutualité scolaire*. But all attempts to create a tribal feeling as a prelude to a national feeling meet with discouragement. The Swiss allow that their education is too didactic, and are conscious of the importance of training the character. They have invented little for themselves and they dare not imitate. German traditions point to drinking and duelling. The best of British traditions are unknown. Many Swiss teachers have spent their *Wanderjahre* in small English schools. They will tell one of headmasters winking at idleness in athletic boys; of colleagues whose literary tastes are fashioned on the sporting Press; of boys, praised for unselfishness on the playing-fields, wantonly careless of corporate property and devoid of all sense of obligation; of parents hoodwinked into believing that intellectual interests are considered of prime importance; and of clever boys made examinational stalking-horses to hide the defects of the mass.

Their own ideals are different. School is considered a place where pupils learn to work, and corporate action in work is regarded as a means of training character. This is noticeable in the absence of marks, places, and prizes. It is shown in the Chorarbeit of a class and in Finsler's latest proposals for the award of the leaving certificate in Bern Gymnasium, where the teacher gives a decision on the work of the session and the inspector modifies it in accordance with the performance of the class as a whole at his visit.

The desire to promote corporate life is not confined to any one school or to any one subject. There are no privileged studies. The genius of the nation runs to equality of opportunity and the avoidance of exhausting struggles, the establishment of the red flag conventions, and Geneva arbitration courts. It is difficult to conceive of the development of character without the elements of contest, but one must recognise the nobility of the ideals that the Swiss are putting before their people.

It will be noticed that the boy who can learn from books is well provided for. There is another pupil, good-natured, well-behaved, though endowed with plenty of sense not intellectual, and often possessed of the qualities of leadership. He is not prominent in Switzerland, for economic conditions do not favour his development. Every Swiss family knows that one or more of its members must emigrate, and the schools prepare their charges for the event. The pressure is on all classes of society. The peasant of the Engadine is the confectioner of Europe, and the Bernese milkman invades Germany up to the Baltic shore. Three years ago a Glarner friend told me that he had lately been to the United States to visit a town called New Glarus. Sixty years ago famine raged in Glarus. The elders met and decided that succour was only to be found by emigration. So after prayer and the casting of lots a band of 193 set out for Wisconsin. Few of them had ever been on a Rhine steamer and none had seen a railway train. Before the history of that little band the wanderings of Ulysses pale into insignificance. But the venture prospered, and to-day the American colony does much to help the folk in the hill Canton of the homeland. In Great Britain we talk of unemployment, we discuss tariff reform and poor law organisation, we squabble about the child's soul, and neglect both his body and his mind. And then we fear that, in the face of foreign competition, our prosperity is waning. Yet are we only in the spring-time of empire, for go wherever you will over the seven seas you will come to a British colony, where broad acres wait for cultivators and a society invites which estimates a man's worth by what he can do and not by what his ancestors have done. A few years ago the stress of war awakened the Empire and the world to the loyalty of the Colonies. What are we doing in return? We send good mechanics and artisans to fill the towns, but we do little to help the growth of the country. And all the while thousands of young people are growing up in our midst who will never get a chance in life. The young men become genteel and are marked with the curse of the black coat. The maidens go into factories and become the slaves of the machine. To all of them our Colonies can offer something: freedom from the domination of Mrs. Grundy, toil that makes the back ache and the heart rejoice, the stimulus of opportunity and the magnetism of expansion. Of the many lessons to be learnt from Switzerland this is of high importance, that we educate the emigrant and do not consider our Colonies convenient places of exile for waste products.

In considering secondary education in Switzerland I was first attracted by the intellectual side; as time wore on the moral side became most interesting, and now, after ten or more years, the social aspect attracts me. For Switzerland has achieved a large measure of that social harmony which strengthens a nation. Fifty years ago we had two peoples in these islands. One commanded and the other had to obey. For most of those who received an education a degree marked the end of learning, and the knowledge gained was useless; it merely served as a mark of social distinction. A few became models of starved accuracy or shrivelled precision, but the majority, having "finished their education," treated the unlettered as the Norman treated the Saxon. This, happily, will soon be a thing of the past. Though the extremes of wealth and poverty may be farther apart than ever, no such statement can be made of the gradation of knowledge and ignorance. But with all this progress in education one great danger lies before us: the danger of misdirection. We are ready to detect the studious artisan and to sing his praises. We even declare that the ancient seats of learning should adopt and train him. Yet we forget that such a course may be the cruellest of kindnesses. Whilst industry and commerce cry aloud for knowledge, enterprise, imagination, and char-

acter, it is well to remember that the old maxim "Wissen ist Macht" is now written "Können ist Macht." This lesson Switzerland has learnt better perhaps than any other country. Cosmopolitan enough to ignore local prejudices and democratic enough to be deaf to the charms of mere respectability, she has long seen that education may, not ignobly, contribute to the material welfare of her people, and this without detriment to its moral or social aims; for each Swiss child knows well the call that nerved its fathers to sacrifice, "We Swiss are born poor; we will not die ignorant."

ON THE TEACHING OF FRENCH IN A SECONDARY SCHOOL.[1]

By E. J. A. Groves, Lic.-ès-L.
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II.

SECOND STAGE.—During this stage, the work hinges principally on the reader. The book we have selected, at any rate for this year and next, is Desnoyer's "Les Mésaventures de Jean-Paul Choppart," in Siepmann's Elementary French Series (Macmillan).

The book is worked through in class as an *unseen*. After a certain portion has been read in French by the teacher, and repeated by a boy, or by the boys in unison, questions are put in French bearing on the extract read, which must be answered in French by the pupils. Every means is used to enable the child to understand thoroughly the piece; by simple explanation in French, by synonyms, by derivation, by imitation.

Then only is the child required to translate the extract into good idiomatic English. All unfamiliar words with their derivatives, and in the case of verbs with their principal parts, are religiously recorded in the pupil's "vocabulary book," and subsequently learnt.

All sentences dealing with useful points of syntax are collected and classified in a special note-book, and the rule then formulated by the pupils themselves. The teacher does not insist on the wording of the rule being rigidly known by heart, but he is most particular that a fair number of the collected sentences should be thoroughly learnt and assimilated. With these sentences as *data*, the pupil can generally be depended on to evolve for himself the rule when he requires it. The rule thus becomes a living reality to him, instead of a meaningless abstraction.

As in the first stage, much attention is paid to the verb. The verbs met with while reading the text-book are carefully classified and their irregularities noted. The formation of tenses is continually insisted upon. Verbs governing a special preposition are always practised with this preposition.

The written homework consists—

(*a*) Of putting into French a certain number of sentences based on the portion of the book which has recently been translated, or

(*b*) Of putting into French a piece of continuous prose also based on the reader.

When these have been corrected by the teacher (for it is imperative that all work should be corrected by him, and not by the class), fair copies of the sentences and proses are given. These are copied into the pupil's note-book and learnt.

In writing the fair copy on the blackboard, attention is directed by the teacher to the most important points in French pronunciation, such as:

The *evenness* in the pronunciation of French syllables.

The *tenseness* of the sound [i].

The *length* of certain vowels, particularly when followed by the letter *r*.

The distinction between [e] and [ɛ], [œ] and [ø], &c.; the change in the sound of certain consonants, such as *b* like *p*, *s* like *z*, &c. *E.g.*, *absent*, [apsɑ̃]; *observer*, [ɔpsɛ:rve]; *quand un*, [kɑ̃t œ̃]; *les hommes*, [lez ɔm]; *second*, [sgɔ̃].

The numerous *e*'s which become mute; *liaison*.

Every week several of these points are more particularly dwelt upon, and attention directed to them by writing out the fair copy in the following manner.

To show that an *e* is mute, a ring is drawn round it; length of syllable is indicated by a colon; evenness of syllables by separating them by hyphens; the tenseness of the letter *i* or the sounding of any particular consonant is shown by underlining it; *liaison* is indicated by a loop joining the final consonant of one word with the initial vowel of the next. I append a fair copy showing the manner in which we write it on the blackboard:

Ce facétieux personna:ge commença pa:r en ri:re d(e) bon cœu:r, tandis qu(e) Jean-Paul étouffait; après quoi seu:l(e)ment, on songea à l(e) retirer du gluant pré-ci-pice. Quelques secondes [sgɔ̃dz] encore et Jean-Paul s(e) noyait [nwaje]. "Il paraît qu(e) tu avais faim [fɛ̃]. Mais qu(e) diable, c(e) n'est point ainsi qu'un enfant bien élevé doit s(e) mettre à table."

Dictation is given to the class once a week. Sometimes an extract, with which the pupils are fairly familiar, is taken from their reader; at other times a simple anecdote is given. The teacher first reads the dictation. Questions are then asked in French bearing on the subject-matter of the dictation; then one or two children are asked to give in English a rapid summary of the piece. In the class-rooms where the blackboard is not fixed to the wall, one child is made to write his dictation on this blackboard, which is so turned that the remainder of the class cannot see what he is writing. When the teacher has finished dictating and has read the piece over a third time, the pupils exchange their papers, and the blackboard is turned round. Pupils in turn read, sentence by sentence, what is written on the blackboard, and

[1] The first article appeared in the April number of The School World.

the mistakes in spelling are pointed out by the class. This use of the blackboard has, at the very least, the advantage that it saves time in correcting, and involves less trouble to the teacher.

When the *dictée* has been corrected and returned, the principal verbs occurring in it are rapidly run through, and four or five sentences based on the subject-matter of the dictation are set for translation.

THIRD STAGE.—The methods used in the previous classes are also to a great extent used in this stage. The reading book, however, is not made entirely the pivot of the scheme. The bulk of the pupils in the fourth and fifth forms are preparing for the matriculation examination conducted by the Joint Board of the Universities of Manchester, Liverpool, Sheffield, and Leeds. The authors which are read are those set for this examination. They are generally two fairly bulky books, and considerable time has to be spent in preparing them.

As most of the pupils in the fourth form only sit for the examination the following year, we take time by the forelock, and prepare one of the books, a year before the examination. By this means, when these boys are removed the following year into the fifth form, they are able to spend most of the time over the second book, with revision, before the examination, of the author they prepared while they were in the fourth form.

But even thus, there is not sufficient time to enable us to use the reader so fully as we do in the third form, and the book is taken, to a large extent, on ante-reform lines. The boy reads a portion in French and then translates; the hardest pieces are carefully translated into their note-books; the grammatical points and idioms, as in the third form, are collected and classified in a special note-book.

A large number of sentences dealing with all the principal points of syntax, in a classified order, have been prepared by me, and a certain number of these are set every week for the pupils to put into French.

As in the previous stages, a fair copy of these sentences is given and learnt, and the rule evolved afterwards.

A certain number of "proses," and essays based on these proses, have also been prepared. The pupils are required to translate one of these proses, or to write a short essay every week. The fair copy of the prose, with the principal points in pronunciation noted as in Form III., are learnt by heart. The essays are carefully corrected, and the pupils rewrite them in their *Cahier au propre*. These corrected versions are used, whenever the opportunity occurs, as subjects for French conversation.

Dictation is also given once a week. The method adopted is as in the second stage, but all the pieces selected are unfamiliar to the class.

FINAL STAGE.—The sixth form are also preparing for matriculation, but they take the "higher alternative" papers. These are considerably harder than those set for the ordinary "pass." The papers comprise unprepared translation; translation of extracts from one set book with questions in grammar and subject-matter; a special grammar paper; translation into French; free composition. The oral examination consists of reading aloud in French; conversation based on the set books; dictation.

The principal objections that I have to the papers set are that there is too much grammar and that the questions set in this subject are not of a type to which the average candidates can do full justice. To obtain high marks in this section of the examination entails the careful learning, practically by heart, of advanced points of syntax. As I have already pointed out, we do not consider that there is any necessity for the wording of a grammatical rule to be rigidly known by heart, and this applies more especially in the highest form of a school. Grammar, after all, is only the scaffolding, by means of which we build up the language. The linguistic feeling or intuitive sense of the language having been developed in the pupil, surely grammar, the crutches of a language, may be thrown away.

Whatever objections there may be to certain parts of the syllabus set by the Joint Board, these do not extend, in our opinion, to the "author" set for this year's examination. Of all Victor Hugo's poetical works his "Feuilles d'Automne" is perhaps the most admirable. In these verses we get glimpses of the poet's life, of his deep affection for his parents, his love for his wife and children, his loyalty to his friends, his admiration for Napoleon, his passionate regard for liberty, his veneration for all that is sublime and pure. The reading of this book has been a source of much enjoyment and benefit both to the teacher and the pupils.

As in the other classes, the poems are taken as "unseens." The poem is first of all read by the teacher. He then gives a summary, pointing out the principal ideas which the poet wishes to convey. Metre and style are noted. The appositeness and originality of the numerous metaphors are dwelt upon.

The pupil then reads and translates the poem. An analysis in French is then made, which is transcribed into the note-book.

All historical and mythological allusions are carefully explained by the teacher, and these are also transcribed in French into the note-book. Numerous extracts are learnt by heart; essays dealing with the subject-matter of a poem or some thought expressed by the poet are set for home-work. Among many others, the following essays have been set:

Pourquoi et pour qui il faut prier; les avantages de l'adversité; rêver c'est le bonheur, attendre c'est la vie; la charité; l'enfant; le romantisme; la révolution de juillet.

The essays given in by the pupils, several of which were written in school without assistance from dictionary or text-book, have proved in a very convincing manner that the final results for

which we were aiming bid fair to be realised, that is to say:

The ability to write freely in French on any topic which comes within the pupil's range of thought, and the acquirement and development of a taste for French literature, history, and the language generally.

EXPERIMENTAL PSYCHOLOGY AND EDUCATION.

By Prof. J. A. Green, M.A.
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III.—Individual Differences in Children.

THE experimental psychologist has rendered no greater service to the cause of education than by the contributions which he has made to the minuter study of the mental life of individuals—children and adults alike. It does not need a psychologist to mark the striking differences which frequently exist even between children of the same parents, and educational thinkers, from Plato downwards, have ever insisted upon the importance of taking these differences into account. It is only in recent years, however, that an attempt has been made to analyse them, to run them to earth, as it were, and find out whether those broad distinctions we have been accustomed to draw between temperaments, for example, are due to native differences in elementary mind processes, and capable, perhaps, of exact registration.

As all mind process is process in time, it is clear that the study of the relative rapidity with which isolated psychical processes take place, particularly when these processes are reduced to the simplest possible forms, will give us one means of comparing man and man. Critics have not infrequently complained that experimental psychology had nothing to tell us except about reaction times, but the chronoscope has been applied with considerable success to the elucidation of problems of association and reproduction, as well as to noting the marked individual differences between the times of simple reaction to sensory stimulus. Indeed, volition itself does not refuse to submit to observation of this kind.

The successful application of quantitative methods to various types of mental process led Kraepelin to suggest the possibility of obtaining a series of figures which would allow the fundamental psychical differences between individuals to be exactly compared. Guided rather by the idea of what was measurable than by any inner principle of connection, he laid the foundations of a quantitative psychology of individuals which suggests important possibilities. It would be no small advantage to the teacher if he could ascertain the mental potential of his various pupils, and it can hardly fail to be of interest briefly to note the lines on which Kraepelin's original ideas ran.

First came the time measurements already mentioned. It is easy to measure the rapidity of the response to a sensory stimulus, the time that is required for the association and reproduction of ideas, and finally to note how long it takes a person to carry through an action on receipt of a prearranged stimulus. In all these cases the particular process under observation is as simple as it can be made—times are short and are usually measured in thousandths of a second.

Secondly came the capacity for improvement with practice, and next the relative permanence of improvements effected in this way. Kraepelin called the latter "general memory," as distinguished from the special memories which formed his fourth group of fundamental differences. Methods of measuring the tenacity of verbal memory were described in the last paper. A similar procedure may be followed, and the relative toughness of memory for colours, sounds, &c., may be estimated. A fifth characteristic of mental activity is the rapidity with which different persons get under way when they take up a new piece of work or make a fresh start after an interval of rest. Others which the ingenuity of Kraepelin found means of including were capacity for resisting fatigue, rapidity of recovery from fatigue, capacity for resisting distraction, and, lastly, the relative ease with which the individual accommodates himself to new conditions of work. He added a tenth measurable characteristic, sleep intensity, which, however important it may be, can hardly be applied in an ordinary psychological laboratory. He proposed to measure it by the height from which a ball must fall upon a resounding drum in order to waken the subject of the inquiry.[1]

Each of the points included in this outline of the Kraepelin proposals would require considerable space for its complete elucidation. Many of them, indeed, have already given rise to a whole literature. The question of fatigue in particular has occupied a vast amount of attention which is fully warranted by the importance of the subject. All teachers are familiar with the more obvious fatigue phenomena. We know how the keenness and the edge go off the work of a class as the dinner-hour approaches; and primary-school teachers have long since been compelled by the pressure of average attendance returns to make Friday afternoon attractive. Ordinary school routine has led a sensible fraction of the children in the past to healthy revolt, and parents have often yielded to importunate requests for a holiday on that afternoon.

Research into the subject has taken many forms, and although it may be true that no satisfactory test of the existence of fatigue or of its extent has yet been arrived at, some striking results have been obtained. Mosso's ergograph and the discredited Griesbach æsthesiometer have been made familiar to teachers by Mr. Perez's

[1] See Ochrn's "Experimentelle Studien zur Individual Psychologie" in Kraepelin's "Psychologische Arbeiten," vol. i., no. 1, for a complete account of the various methods of research. See also Kraepelin's "Die Arbeits Curve." (Engelmann, 1902.)

article in vol. ix. of the Board of Education's "Special Reports on Educational Subjects." Dr. McDougall has devised an apparatus which has been described in the *British Journal of Psychology*. The same journal contains an account of a research by Mr. J. H. Wimms on the subject which is good in itself and at the same time illustrative of the methods adopted by Kraepelin, Oehrn, and others in their fatigue researches. Any purely psychological investigation has always to face the difficulty of distinguishing between the effects of fatigue and those of boredom.

The study of the subject of the psychology of the reading process has brought out individual differences in the *modus operandi* of attention which seem to be fundamental in character. The whole psychology of attention is, one may say, under revision, thanks very largely to the experimental study of the subject,[1] but psychological controversy lies outside the limits of these papers. Nevertheless, the distinction between the "fixating" and the "fluctuating" attention type is clear and possibly important. It came out in the remarkable differences shown in individual procedure when reading a word exposed to view for a very short time by means of an instrument known as the Tachistoscope. The particular form of the instrument need not concern us here. It is sufficient to say that it allows a printed or written word, or group of words, to be exposed to the eye for short, varying, and measurable intervals of time. Before the exposure, the observer's eye is carefully fixed upon a given point, thus excluding eye movement.

To take a case from Messmer's "Psychology of the Reading Process in Children and Adults."[2] The word to be read is *Kastanienverkäufer*. After each exposure, the observer gives the result of his reading. This is taken down, and the observations are repeated until the correct reading is arrived at.

Case I.	Case II.
A. *Kastanienverkäufer.*	
1. Kleinverkäuferin.	3. käufer.
2. Kleinverkäufer.	4. verkäufer.
3. Kanverkäufer.	5. astanienverkäufer.
5. Kastanienverkäufer.	6. Kastanienverkäufer.
B. *Kriegführenden.*	
1. k—werkführenden.	2. finger.
4. bergführenden.	3. führenden.
5. kerkführenden.	8. i führenden.
6. kriegführenden.	9. kriegführenden.

(The numbers denote the place of the particular observation in the exposition series.)

It will be noted that eye movements do not account for the difference in the various readings, as care has been taken to secure steady fixation prior to exposure. A comparison of the two cases suggests differences which may well be of a fundamental character. In the second type, it will be noticed that attention wanders very slightly from the point upon which the eyes are fixed. When this point happens to be a little below or above the word, the observer has very great difficulty in getting any intelligible result. After each exposure he must readjust his eyes in order that he may extend his observations. What has been called the "span" of his attention is small. There is an entire absence of guessing, or, when he ventures to guess, he does it consciously. An adult of this type can distinguish clearly the interval between an optical impression and his subsequent interpretation of it.

A great contrast is presented by the worker of the first type. The range of his attention is not so closely limited by the psychological point of fixation. He takes in the impression too vaguely to permit of its analysis, but he is often able to give a definite result which approximates in varying degrees to objective accuracy. He is the future intuitionist who may rise to eminence in art or literature, or, at the other end of the scale, may prove the despair of his teacher by reason of his fatuous inaccuracy in all things where objective certainty is essential. On the other hand, the procedure of the second type is precisely that of the good scientific observer—the man whose observations may become the standard, or which, in any case, will stand the test of repetition.

The differences in the two types are more observable in adults than in children. The latter are always more prone to guess than adults. The psychical apparatus for observation is relatively imperfect, and a defective vocabulary introduces difficulties which tell in favour of a guess. Nevertheless, Prof. Meumann, under whose direction Dr. Messmer conducted his investigations, has shown that the characteristic differences come out during school age. Readers of Binet would probably imagine that, of the two girls who formed the subject of his long inquiry, Marguérite would have belonged to the accurate objective type, whilst Armande would have proved a typically subjective worker, had they been put to the test of the tachistoscope.

Individual differences in children may also extend to the very apparatus of thinking, or at any rate to the imagery which accompanies it. Everyone knows how much more easily and perfectly one person can visualise than another. Such differences in the power of imaging are not confined to the sense of sight. The peculiar versatility of some men in acquiring new games which involve complex or delicate movements—as billiards or golf, for example—is largely due to the clearness with which they recall their muscular sensations when the adjustments of limb and muscle were first put right under the guidance of an inspector. Probably each one of us has a specially favoured sense which provides us more liberally than the rest with the fundamental requirements of our mental life. In this way we get what are called Ideational or, more strictly, Image Types.

The modern language teacher will appreciate the bearing of this upon his early picture work. The boy who cannot visualise readily is not likely to receive the help from those artificial class-room

[1] See Titchener's "Psychology of Feeling and Attention," Part ii.
[2] "Zur Psychologie des Lesens bei Kindern u. Erwachsenen." (Engelmann, 1904.)

aids which many teachers expect. One wonders sometimes whether a considerable percentage of the failures in modern language work may not be traceable to our failure to take into account the particular way in which words enter into the mental constitution of the individual children.

The case of verbal imagery is, however, quite a special one. School training gives us at least four types. There is the spoken word the memory of which is at our service (auditory images), the printed or written word and the visual picture of it which we may call up at will, the word in the act of being pronounced the muscular sensations in connection with which we can image by thinking the word "on our tongue," and lastly the equally revivable muscular sensations which belong to the written word. Pathological cases show the independence of these various image groups that are attached to words in use. Difficulties of spelling may be traceable to defective powers of visual imagery as well as to defective vision. Word blindness is the extreme form of defect in this respect.

School exercises are so predominantly based upon speech production that the children in whom the tendency to work with visual verbal images is naturally predominant are probably forced by their training into reliance upon sensations of movement in the vocal organs. Confining ourselves to inquiry into the types of verbal imagery to which the individuals in a group of children may belong, we may cite some of Prof. Meumann's methods of ascertaining them.

His first method is founded upon the idea of introducing disturbing stimuli during the process of learning a series of words or letters by heart. Having established the maximum number of such words which the subject can repeat after once hearing in the way described in the last article, a new series is read out to the accompanying beat of a metronome. Those who rely upon auditory impressions absolutely will in this way be very seriously handicapped; but as few people belong to the purely auditory type, the actual effect of the disturbing stimulus is in most cases *nil*, unless, as may happen, the attention of the observer is affected by it. In order now to prevent the subjects of the inquiry from following the spoken words by suppressed articulation, thereby establishing a series of motor images which will guide reproduction, they are required to utter a syllable, say la, la, la . . . to the time of the metronome whilst they listen to the spoken series which is to be reproduced. Those who rely on inner speech when endeavouring to get hold of such a series are now heavily handicapped. Their maximum power of immediate reproduction is considerably reduced, and the more absolute their reliance has been, the more serious is the disturbance. As we have previously noticed, however, there is still another way in which motor images may be formed, viz., by writing; and in order to prevent the innervation of hand movements taking the place of suppressed speech movements, Meumann has found it useful to require the rhythmical movement of the right hand in company with the syllabic intonation. This procedure enables him to eliminate those who belong to the purely motor type.

In order now to find out those who utilise both auditory and motor images, he suggests that the subject should be asked to repeat to the time of the metronome the alphabet or some other series of words of which he is perfect master. In this way it becomes difficult, if not impossible, for him to rely on sound or movement images for the reproduction of the series which may either be shown or read to him. If the series is read, visual images, *i.e.*, images of the printed word, may be excited which will serve the turn of some sufficiently well to enable them to reproduce a fraction or even the whole of the series. The strongly marked visualiser will score. If now, instead of reading the words, we let the children see them whilst they are at the same time vocally engaged, we are able to determine the extent to which individuals can make use of visual images when other means of acquisition are not available.

The subject of research into the individual differences between children cannot be touched even thus lightly without at least a passing reference to Binet's "Experimental Study of Mind" ("Étude expérimentale de l'Intelligence"). The author told us long ago that in his view such differences are more fruitfully studied in the products of the higher intellectual processes than in the isolated analytical exercises of the psychological laboratory. His work is therefore of quite special value to teachers, who will find much to interest them in the book. The patient and detailed work he carried through with the two girls Armande and Marguérite is a monument of suggestive psychological investigation which teachers ought to read.

THE N.U.T. CONFERENCE AT MORECAMBE.

THE fortieth annual conference of the National Union of Teachers was held at Morecambe during Easter week. The main meetings were held in the Alhambra Palace, which accommodates 2,400 persons and was nearly always well filled.

A feature of the conference is the reception of delegates from teachers' associations in other countries, which immediately follows the president's address. This year the president is Mr. C. W. Hole, of Hackney, whose main themes were the ever-present religious difficulty and the new circular on staffing, already familiarly known as Circular 709. Reviewing the situation following on the Act of 1902 and the fruitless attempts which have been made to solve the so-called religious difficulty, Mr. Hole stated the only two courses which could be followed: (1) concurrent endowment of all types of primary schools, with facilities for entry of all creeds; and (2) the secular

or civic solution—that "counsel of despair." He proved his personal courage by pronouncing for the latter in a meeting in which opinion was sharply divided.

The discussion of Circular 709 called forth a warm eulogy of Mr. Runciman as "one of the wisest and ablest of the many brilliant men who have presided over the destinies of the elementary schools of this country." Suggestions for the limitation of the size of classes and for the improvement of the quality of the teachers have been made before, and subsequently quietly withdrawn. It is much to be hoped that Mr. Runciman will earn the president's continued approval by carrying out the reform indicated in this circular, the results of which could hardly be overestimated. The president evidently realised the effect which the necessary increase in the cost will have upon the ratepayer, for at the close of the address, which was shorter than usual, he joined in the general plea for a largely increased Treasury aid to the harassed education authorities, who have additional duties imposed upon them by statute without a corresponding grant from the Central Exchequer.

The address contained no reference to secondary education; indeed, the business of the conference is almost exclusively primary. An important innovation was, however, introduced at the Hastings conference last year. Following the example of the British Association, sectional meetings were held, and in these secondary education was discussed, especially at the points where it comes into direct contact with the primary domain.

Three such meetings were held this year. One took the form of a conference between the executive of the Union and the representatives and officers of education committees. Two admirable papers on "The Supply and Training of Teachers" were read by Mr. C. H. Wyatt, the popular director of elementary education for Manchester, and by Mr. Ernest Gray, L.C.C., an ex-president of the Union.

Mr. Wyatt discussed the question of supply from the administrative point of view, but with many expressions of a warm sympathy with those whose work he supervises and of a strong belief in the efficiency of his system. Examining the question, he directed attention to the danger of preparing teachers for whom no posts can be found. He showed how, urged by fear of the dearth of teachers which existed in 1904–6, authorities have lavishly provided for the increase of acting teachers, of supplementary teachers, and, in London and elsewhere, an over-supply of college-trained teachers. Mr. Wyatt noted and deprecated a deterioration in the quality of the teachers now being introduced, and quoted the figures of fifteen county boroughs and four counties in support of his contention. He claimed further Imperial aid, especially for training, a proper proportion of trained teachers in every school, and a sensible raising of the standard of certification of acting teachers.

Mr. Gray's clever paper proved to be largely complementary to that of Mr. Wyatt. Dealing briefly with supply, he deprecated the enticement of candidates into the profession by artificial means. With the present mode of preliminary training Mr. Gray seemed largely in agreement, though he expatiated upon the folly of sending the bursar to college at the age of seventeen. In common with most members of the N.U.T., he laid undue stress, as most secondary-school teachers would think, upon the supposed necessity for giving the would-be teacher some professional training before he enters the college course. He would have the cost of the training borne by the candidate himself, assisted by a system of scholarships for the ablest. His suggestion of a differentiated course of training to suit the mental capacity or financial position of the candidates, providing a lower course for some and the highest academic career for those who can achieve it, was hotly debated, but without shaking Mr. Gray's position. After emphasising Mr. Wyatt's strictures of the Board of Education for manufacturing teachers beyond the needs of the schools, he finished an excellent essay by discussing the teaching profession as (*a*) a profession entirely controlled by the State, or (*b*) a profession under the State for its training but dependent upon education authorities for employment.

At another sectional meeting a paper, the main parts of which appear elsewhere in this issue, was read by Mr. A. R. Pickles, of Burnley, on "Leaving Examinations and Scholarships." The paper was apparently written to "smash up the educational ladder" and to advocate the substitution of a "wide corridor" between the primary and the secondary school. This obscure phrase is rather current now in N.U.T. circles. Those who use it are dissatisfied with the present system of scholarships and free places. Secondary-school teachers are generally agreed that quite as many scholars are passed up by the educational ladder as can make a proper use of the privileges offered.

A third paper, on "The Teaching of Educational Handwork," was read by Mr. Charles Bird, of Leicester, in the Devonshire Hall. We hope to print part of this paper next month.

The desire of the average delegate for work is shown by the increased number of meetings. In addition to the sectional meetings, there were six long sessions, besides many evening meetings of sections and innumerable social functions, including a grand reception by the Mayor.

The chief subjects discussed in the three public sessions were: (1) the need for further grants from the Treasury; (2) the disposition of education authorities to lower existing salary scales; (3) the questions of (*a*) combining departments under one head, and (*b*) the increase of mixed schools. This last proposal, when put to the vote, was easily defeated.

In the three private sessions Mr. Rankilor, one of the founders of the Union, bade the mem-

bers farewell on his retirement from active work. The acquisition of the *Schoolmaster* was explained, and the annual subscription was raised by 3*s*. after a fierce debate.

A notable feature of the elections to the executive was the heavy defeat of the women candidates, only two of whom survive. This was the occasion of much speculation and regret. The reasons most commonly accepted were (*a*) a protest against the suffragette movement, and (*b*) a want of proper organisation.

The next conference is to be held at Plymouth, when Mr. Marshall Jackman will be president.

LEAVING EXAMINATIONS AND SCHOLARSHIP COMPETITIONS.[1]

By A. R. Pickles, M.A. (Oxon.), B.A. (Lond.).

WE make a great fuss in this our day about the educational ladder which links the primary school to the universities. Here and there a lucky and plucky lad takes the instant hour and elbows himself up through the crowd on to the educational plateau; we thereupon clap hands and pat backs at the triumph of the elementary school. But what after it all? Of course, the lad is all right; he generally merges into the great sea of university mediocrity, and takes on the delightful manner of the 'Varsity man, ultimately emerging "a mere residuum of decent minor tendencies"; but what about the gain to the country? I venture to say that many are hailed as scholarship prodigies who possess no more than average intellect or native capacity, but are more or less a compound of cram and childish deceit. Lest I should be misunderstood, let me say that scholarship-winners consist of two classes—those who are bright by reason of innate ability, and those who are burnished by a liberal application of metal polish; these latter exist because of the false estimate put upon the scholarship successes by education committees possessed of good intention but incorrect outlook, and by a credulous public that encourages newspaper puffs.

Let me say that the progress made in recent years—especially during the last two years—in the organisation and the liberalisation of secondary education has been commendable. There are to-day greatly increased opportunities for those "who desire and deserve it," to pass forward to secondary schools, which are no longer merely the refuge of the socially exclusive. The narrow and exclusive spirit of the higher officials of the Board of Education has been broken down, and the attempt to conserve the supply of higher education as a social, rather than as a national provision, has failed. There is yet room for improvement. There are still far too many pupils in recognised secondary schools doing elementary work. The upper forms of most secondary schools still present a beggarly array of empty benches, because so many pupils leave after about two years, pupils who ought never to have been passed forward. The present object of secondary education is, or should be, to provide a training for those who will take rank as leaders in industry, in commerce, in the professions, so that there may be tangible benefit, not merely to the individual, but to the nation; yet what can be said of a system that takes a lad at the age of eleven plus or twelve out of an elementary school, and finds that same lad at the age of thirteen and a half leaving the secondary school to become an errand boy at 3*s*. a week? And similar cases are by no means uncommon. We are gradually building up a system of secondary schools of varying character and function, with liberal grants and elastic curricula, with great freedom to the local authorities in the matter of fees and scholarships, but we are losing much of the value of these schools owing to the short stay of so many pupils who would be better in the elementary school, unless they are prepared to take a proper four years' course at a secondary school.

The relationship between the primary and the secondary school involves three questions of paramount importance: (1) method of transfer; (2) co-ordination of curricula; (3) after-careers of scholarship-holders. On the method of transfer—I deal only with free places and scholarships—I stand for the entire abolition of scholarship competitions, for the smashing up of the educational ladder, and the substitution of a "wide corridor" between the primary and secondary school. I want to give everyone, rich or poor, equality of opportunity, to make the lower middle and artisan classes feel that they have as great a part as anybody in our secondary schools. It is not enough to have a handful of scholarship children—too often cold-shouldered by the other children. The presence of boys and girls from the *earnest* classes—the classes that have to work hard—means a standard of effort that will more than make up for the lack of purple and fine linen. But this can never be achieved so long as the present method of transfer remains unmodified—so long as we stick to an examination which consists of "the setting of printed questions by an invisible examiner to remote children." Huxley declared that the educational abomination of desolation of the present day is the stimulation of young people to work at high pressure by incessant competitive examinations. Some wise man said of early risers in general that they are conceited all the forenoon and stupid all the afternoon. Whether this is true of early risers in the common acceptance of the phrase I do not say, but it is too often true of the unhappy children who are forced to rise too early in their classes. The vigour and freshness of budding intellect are too often washed out of them by precocious mental debauchery, their faculties are worn out by the strain put upon their callow brains, and they are demoralised by worthless childish triumphs before the real work of life begins. The

[1] From a paper read at the Morecambe conference of the National Union of Teachers on April 14th.

nation may yet be a credit to its bright children if it will allow them to develop naturally, but we know too well that the forward child not seldom becomes the backward youth—the young man with a *future behind him*, killed off in the "engrenage" of the scholarship mill. It is as if we said:

Ram it in, jam it in;
Children's heads are hollow.
Slam it in, cram it in;
Still there's more to follow.

Rap it in, tap it in;
What are teachers paid for?
Clap it in, slap it in;
What are children made for?

Is the picture over-drawn? Go into your schools in the Lancashire county alone, and you will find all the viciousness of the scholarship competitive system rampant. A Lancashire non-county borough head teacher told me the other day that at all the schools in his town—all that sent up scholars for competition—special classes are taken every day, and practically all the day, where selected children are being "worked up" for the examination. Children taken before school, taken after school, taken at the teachers' houses, taken on Saturdays, with far too much homework—all for the honour of the school and the glorification of the teacher. Do I blame the teachers? Yes, a little, but I blame the system infinitely more. A teacher knows he will stand well with the education committee if he can show a few scholarships with bright children, even if it involves the partial neglect of three or four hundred others. So head teacher and assistant, or both, spend their time in cramming for county council or county borough scholarships, because education committees and the public cry out when the scholarship comes home, "Well done, thou good and faithful servant!"

It is because I am convinced that the system is harmful to the scholarship candidates themselves, that it results in neglect of the rest of the children in the class or school, that it often does not secure the best material, and is founded on wrong educational principles, that I plead for the abolition of competitive examinations for scholarships and the substitution of a new system.

I believe it is possible to devise a scheme which will not only do away with scholarship competitions, but will also bring about a real co-ordination between primary and secondary schools, between day and evening schools, between secondary and technical schools, and between evening schools and technical schools—a co-ordination not merely in respect of pupils, but also in curricula, and in this I venture to make use of a term which may possibly at first cause some timorous teachers to hold up their hands in horror. I make bold to say that it would be advantageous, economical, educational, and rational, if the school certificate of one school could be made the passport to the next grade or type of school to which the pupil desires to pass—from the primary to the secondary, the secondary to the technical, the day to the evening school, the evening school to the technological classes. But the kernel of the whole scheme must be that the school certificate is issued by and upon the entire responsibility of the teacher of the school from which the pupil proceeds, a certificate dependent upon the pupil's school record, position in school, character, disposition, special aptitudes and tendencies, and *not* upon the luck of a single examination either by teacher or outsider.

The co-ordination of the curricula of primary and secondary schools arises naturally out of the question of transfer. It would appear feasible so to arrange the teaching as to permit of a natural progress from one grade of school to another, and at the same time to provide for much more active and constructive work for those pupils who remain in the primary school from twelve to fourteen years of age, with a view to group courses in evening schools, these again leading naturally to the higher work of science, art, and technological classes. Then again, there is no valid reason why the number of pupils transferred should not vary year by year, according to the number of children who desire and deserve secondary education. Nor need there be any alarm as to the over-crowding of secondary schools, at any rate for long years to come. The two conditions—possession of the primary certificate and an undertaking to stay the full course—will in themselves limit the transfers to reasonable numbers. It should also be possible to award scholarships of varying value, according to the need of the parents, and at the same time avoid all undesirable distinctions. Under the present system hundreds of scholarships are awarded to children whose parents can well afford to pay the secondary-school fees, and who often pay for special coaching, while many a bright lad from a poor home is debarred because the scholarships seldom carry with them maintenance grants. There is need, too, for some better provision that the secondary-school course of a bright child whose parents cannot pull the wires of social influence may be a real lift on the way, that the expense of his training may not be wasted through his being compelled to accept a position amongst the world's workers in which there is no proper play for his intelligence and capacity.

When the country is weary of wordy warfare about so-called Education Bills, and when the finance of education is put upon a sensible basis, we may possibly see a serious effort made towards such a real co-ordination of schools and curricula as will facilitate desirable transfer, will abolish the present scramble and cram for scholarships, will fit the scholarships to the needs of the family income, will provide a test of adequate general education, and will stifle the cry, now heard more or less insistently, for a return to the bad old days of individual examination of little children by outside examination.

PERSONAL PARAGRAPHS.

CANON HENRY HOLDEN has died at the ripe old age of ninety-four. He had a distinguished scholastic career, starting with a Balliol scholarship, gained while at Shrewsbury School, and including two headmasterships, of Uppingham (1847) and Durham (1853) Schools. After his resignation of the latter in 1882, he was for many years rector of Luttesham, Rutland, and afterwards lived in retirement at Streatham. His old pupils remember him with affection. One of his latest scholars at Durham tells me that his guiding principle was trust in his boys; he left them to manage their own societies and made many novel applications of the monitorial system. His schoolmastering, of course, was on the old

The late Canon Holden.

severely classical model, his great forte being Latin verse composition. All the mornings of the week with his sixth form were given to classics, the afternoons being relegated to mathematics, except on Tuesday, when Latin prose was the standing dish. He was a brilliant composer of Latin verses himself, and was unrivalled as a teacher of that subject; and, as a recent writer in *School* remarked, in his ninety-fifth year, if need arose, Latin elegiacs flowed from his pen as smoothly and gracefully as ever.

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WE must quote the same writer's account of an *annus mirabilis* in which Dr. Holden must have had a great share. The school numbering 120, there was a sixth form of nine boys. Of these, five won open scholarships at the universities, two entered the Indian Civil Service by open competition, and the other two got first classes at the university. This form produced two "blues," one of them being a "double blue," three fellowships, seven first classes, three university scholarships, and a Chancellor's medal. I have seen a specimen of the doctor's excellent Latin verses in his own handwriting about the close of his Dunelmian headmastership. It had been a calligraphy to be proud of in his earlier years, but by the time he was sixty showed unmistakable signs of wear. It must be admitted that by this time, too, his trust in the boys was carried a little to excess, and all who know boys will easily recognise that they are not worthy of a universal confidence. Even at the age of sixty and afterwards he would kick off *in propria persona* on the first day of the football season, and he would be the best skater on the river when the waters below the cathedral became a safe sheet of ice. His published literary output was small: he was joint editor of "Sabrinae Corolla," the Shrewsbury book of Latin and Greek verse, and published "The Symbolical Teaching of the Sanctuary" in 1849. He was the cousin of Hubert Holden, who was headmaster of Ipswich School. The photograph we reproduce was taken in about his sixty-fifth year, and was lent for the purpose by my old-Dunelmian informant.

* * *

ANOTHER experienced schoolmaster died in early March, Prebendary Edward Harris, D.D., rector of Colwall, Herefordshire, at the age of seventy-two. After leaving Lincoln College, Oxford, he served for a time as assistant-headmaster at King Edward's School, Birmingham, where he worked for four years until his appointment at Clifton College. Here he was a master for eleven years under Dr. Percival. In 1876 he became headmaster of Exeter Grammar School, which, says the *Times*, "under his supervision was remodelled and rebuilt." In 1881, with broken health, he retired from educational to do clerical work on Dartmoor and at Torquay. In 1888 he resumed his school interests as headmaster of the King's School, Parramatta, N.S.W. Here again his health suffered, and he returned to England and clerical work in 1895.

* * *

THE Rev. A. F. Rutty, observing the ideal quarter-century limit of headmastering, has resigned the headmastership of St. John's Foundation School, Leatherhead, which he has held for twenty-six years. Mr. Rutty has been a familiar figure at headmasters' meetings, where he often had something vigorous and incisive to say. Before his Leatherhead days he was headmaster of Queen's School, Basingstoke. He threw himself earnestly into his pulpit work; there was always a *vis incita* behind his speaking and preaching which made it obvious he was in earnest. For the rest, he was a thinker on distinctly conservative lines.

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MILL HILL SCHOOL, which recently had a stroke of bad luck in the shape of a fire in its buildings, has recently had a handsome compensation in the shape of a munificent gift from Lord Winterstoke of £9,000 for the foundation of three university

scholarships to be held by Mill Hill boys. Lord Winterstoke is an old Millhillian and chairman of the governors of the school.

* * *

MR. AMBROSE BREWIN FISHER, who has just died, had been H.M.I. of Schools in various parts of England and had won everywhere the confidence of children and the affectionate regard of teachers. He was himself a man of parts. Exhibitioner of Balliol, first in "Mods," second in "Greats," a good oar at school and college, a thorough gymnast, a volunteer, and a county footballer, he was bound to have sympathy with the outdoor interests of young people.

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EVE has asserted her rights at Trinity College, Dublin. Since the foundation of the College no woman had held a position on the teaching staff until Miss Constantine Elizabeth Maxwell was elected an assistant to the professor of modern history. She graduated with a first senior moderatorship in history and political science. It would seem that the writing and teaching of history is a sphere in which women are fitted to excel.

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MISS CONSTANCE WORSFOLD, who has for some years been a teacher of mathematics at St. Leonard's School, St. Andrews, has been appointed to succeed (in September) Miss Jex-Blake as headmistress of St. Margaret's School, Polmont.

* * *

FROM his experience it would appear that the authorities of the Brighton municipal technical college have elected a thoroughly practical man in Dr. Burnie to succeed Dr. Draper in the principalship. He is a signal instance of the wisdom of moving on and gaining variety of experience in early years. Now only thirty-four years old, Dr. Burnie—his degree is a London Doctorate of Science—has had two years in a workshop, two years as a student at Zürich, some time as teacher of physics and electrical engineering at Salford, two years as demonstrator in electrical engineering at the Chelsea Polytechnic, and three and a half years as principal of the Croydon Polytechnic. That the rolling stone gathers no moss is apt to be a mischievous saying as applied to the early careers of educationists.

ONLOOKER.

HISTORICAL REPRINTS.[1]

THESE are six volumes in the eighth and latest series of the well-known Everyman's Library of Messrs. Dent and Co. These enterprising publishers are doing valuable service to students of standard literature by placing within their reach in cheap, well printed, and attractive editions some of the classics of the English language which have hitherto been accessible only in old and expensive forms. The usefulness of these reprints is, as a rule, further enhanced by scholarly introductions from the pens of competent modern authorities.

Nevertheless, the practice of reprinting without detailed annotation and commentary editions of old books, even if they are standard works, is open to criticism on the ground that it may lead to dissemination of error. The volumes before us serve to illustrate this danger. They contain selections from the historical writings of two authors well known in the Victorian era. The elder of the two, Dean Milman, died in the year 1868; but his "History of the Jews," here reprinted, was first published nearly forty years earlier. It was an authoritative work in its day, that is, some eighty years ago; but the prodigious advance which has been made in historic research and Biblical criticism during the period which has elapsed since the original publication has rendered much of it obsolete. Yet it is all given here as left (after revision in 1863 and 1866) by its author, with only the general *caveat* of the editor to warn rather than guide the reader in his task.

As to Froude, he was a later writer. His "History of England, 1530–88," from which these volumes are extracted, was issued during the years 1856–70. But though Froude is comparatively modern, and though he was a pioneer of the modern devotion to manuscript records, many thousands of which he examined, yet he was so incurably biassed in favour of Protestantism and against Catholicism that his whole historical vision was distorted. He was, as a brilliant Frenchman has remarked, to such a degree afflicted with "le génie de l'inexactitude"—an affliction which the French critic calls, indeed, generically "la maladie de Froude"—as to be almost wholly untrustworthy, particularly in estimates of character. Hence to send out editions of Froude unaccompanied by detailed notes giving some of the main results of the researches of Mr. Brewer, Prof. Pollard, Mr. Fisher, and others, seems a doubtful blessing. In other words, these reprints are good for those who know how to use them, but they are not good for "Everyman."

[1] "Henry the Eighth." By J. A. Froude. 3 vols. "Edward the Sixth." By J. A. Froude. 1 vol. "History of the Jews." By Dean Milman. 2 vols. Cloth, 1s. net each; leather, 2s. net each.

THE QUALIFICATIONS AND TRAINING OF MODERN LANGUAGE TEACHERS.

THE committee appointed by the Modern Language Association in 1907, under the chairmanship of the Rev. E. S. Roberts, Master of Gonville and Caius College, Cambridge, to report on the existing provision for the training of modern language teachers, and to make recommendations, has presented its report. The document, which is signed by all the twenty-five members of the committee, is printed *in extenso*, with illustrative matter on the present facilities for training, &c., &c., in the April issue of *Modern Language Teaching*.

The recommendations of the committee are as follows:

(i) Qualifications.

1.

The committee recommends that the specialist teacher in either French or German should be required to possess the following qualifications:

A.

A university degree in honours (or its equivalent) in the language or languages which he or she proposes to teach as a specialist.

The range of the examination for such a degree should include:

1. An oral test.

2. Phonetics—a general grounding in the theory and practice.

3. Grammar and syntax:

(*a*) Sound knowledge of the living language.

(*b*) Historical grammar.

4. Power of translating idiomatically and correctly into and from the foreign language.

5. (*a*) Wide reading in modern literature—*i.e.*:

For French: XVII., XVIII., and XIX. centuries.

For German: XVIII. and XIX. centuries.

(*b*) Study of some masterpieces of the mediæval literature.

(*c*) History of the literature in broad outlines.

6. An essay in the foreign tongue of at least two hours' duration.

B.

It is desirable that a specialist teacher should have spent a period (consecutive, if possible) of at least six months' residence abroad. For teachers giving instruction in French and German, the period should be six months in each country.

2.

The committee considers that a great deal of modern language teaching may be properly given by teachers who have not taken an honours degree in modern languages, but have a knowledge of one or more modern languages adequate to certain stages of modern language work in schools.

The committee recommends that such teachers, in addition to their other academic qualifications, should be required to possess—

(*a*) A colloquial command of the language or languages to be taught.

(*b*) An adequate knowledge of phonetics.

Note.—The committee recommends that examinations for diplomas should be instituted at the universities or elsewhere which should provide for modern language teachers a test in (*a*) command of the spoken language (French or German) and (*b*) knowledge of phonetics.

The committee recognises that such teachers, by reason of experience, study, and residence abroad, frequently qualify themselves for the highest modern language work in their schools, and thus pass into the ranks of specialist teachers.

(ii) Professional Training.

The committee recommends that the professional training of modern language teachers should be conducted (*a*) in training departments attached to universities; (*b*) in training colleges; (*c*) in training departments attached to schools; or (*d*) by a combination of (*a*) or (*b*) with (*c*).

1. It is desirable that the student, before appointment to his first post, should have three terms of professional training.

2. (*a*) In the case of the specialist teacher particular attention should be given to the study of the methodology of language teaching, and to the organisation of the language work throughout the school.

(*b*) In addition to the general professional training pursued by all students, the students who intend to teach other subjects besides modern languages should receive special instruction in the methodology of language teaching.

3. (*a*) Concurrently with the study of theory there should be full opportunity for practice in teaching under proper supervision in suitable schools.

(*b*) In the case of the specialist teacher, the greater part of the practice should be in modern language teaching.

4. It is desirable that a list of such schools as offer special facilities for training modern language teachers should be drawn up, circulated, and revised from time to time.

5. Care should be taken in the process of training to afford practice in setting papers and marking answers, and in conducting oral examinations.

The qualifications laid down for the specialist teacher of French or German are not likely to become a subject of controversy, and though possibly some critics would wish to include the history of the country the language of which is professed, it seems reasonable to suppose that teachers who possess the qualifications aimed at, and, further, have resided abroad, may be trusted, in their own interests, to familiarise themselves with the historical movements and social forces which the literatures of France and Germany reflect.

One point is very clearly brought out with regard to the specialist teacher. If two languages are to be taught as a principal subject, the qualifications must be the same in each. Knowledge of French is no longer held to include a command of German, nor *vice versa*. The present demands on teachers of modern languages—graduation in honours, residence abroad, and training—seem to point to the fact that in future most teachers will have to limit themselves to one modern language as a principal subject, with another language, ancient or modern (including English), as a subsidiary subject. It is worth putting on record that Germany is now moving in the same direction.

A certain amount of modern language work must for the present be placed in the hands of teachers who have not graduated in honours in modern languages. What should be the nature of their qualifications and how these qualifications should be tested are points which have been carefully considered, and the committee suggests (one member dissenting) a diploma examination, at the universities or elsewhere, to test the command of the spoken language and of phonetics.

We believe that such an examination for teachers would go far to raise the standard of modern languages in our schools. A study of much of the work submitted in the usual school examinations points to an enormous variation in the standard of knowledge in the schools. Many sets of papers are sent in which show that the teacher has been confronted by a set of dolts, or that he has not possessed an adequate living knowledge of the language and therefore has failed

egregiously in imparting the rudiments of the language as a living force.

The committee expresses no opinion as to whether phonetics should be taught in schools; this was obviously outside its province; but the report indicates in the strongest possible way the view that *all* teachers of modern languages should have a knowledge of phonetics.

The recommendations on "Professional Training"—which, in the opinion of the committee, should be done in this country and not on the Continent—follow the usual lines, and seem to have been the result of a compromise between the advocates of the university method and those who look for a solution of the problem by the further development of training departments in our secondary schools.

Unfortunately, the whole question of training in this country is in its infancy, and no satisfactory information is available to show which method produces the best type of teacher. The Board of Education is now taking action in this matter, and we hope that in a few years' time flourishing training departments will exist for modern language teachers in those schools in which the quality of the work lies within the knowledge of the Board. Excellent modern language teaching is now being done in various parts of the country, and these good traditions and tried methods should be handed on to another generation of teachers, who should be attached to these schools in small groups and placed, for the purposes of training, under the direction of the headmaster or headmistress and the modern language specialist.

THE PRONUNCIATION OF LATIN.

LAST year the Board of Education recommended a reform in the pronunciation of Latin. The result has been that the practice throughout the country has become practically uniform, at least in name. But there is no doubt that large numbers of teachers are insufficiently equipped for their work, whilst others may very likely be careless in details. The new fly-sheet (Circular 707, March, 1909), reprinted below, reiterates the chief rules, adding a few necessary cautions. There is, however, one mistake in the paper which may have bad consequences. The vowel *ē* is not to be sounded like "*a* in *fate*," which is a diphthong, but like the French *ê*—a sound easily taught to anyone, the more so as all who learn Latin will be learning French. A caution should also be inserted that *ae* and *oe* were probably not spoken as *ai* and *oi* in the classical time, but that this broader sound is recommended to avoid confusion. We hope a similar paper will be issued for Greek. In both cases the Classical Association has given a valuable lead. This paper is based on the researches and discussions of the Association.

BOARD OF EDUCATION'S CIRCULAR.

The serious inconveniences that arise from the want of a common and fixed system of pronouncing Latin in schools are generally admitted. They have in the past gravely affected the efficiency and success of the teaching of Latin. In some cases the system in use was demonstrably erroneous, and in others there was no consistent system at all, or different systems were in use in different forms, with the result of much confusion, much needless labour, and positive encouragement to slovenliness and inaccuracy.

In order to remedy these evils, it is necessary that a uniform system of pronunciation should be adopted throughout the Latin classes in each school, and almost equally necessary that a common system should be adopted in all schools in which Latin is taught.

To effect this object, the Board recommended two years ago that the scheme of reformed pronunciation adopted by the Classical Association and approved by the Philological Societies of Oxford and Cambridge, the Headmasters' Conference, the Incorporated Association of Headmasters, and the Assistant-masters' Association, should be brought into use in all schools recognised by the Board. From returns made by the schools it appears that this system has been generally adopted, and is now in use in all but about 5 per cent. of the schools in question.

The rules of this system (excluding certain unimportant or debatable points which hardly affect ordinary usage) are set forth below.

If the authorities of any school still prefer to adopt some other system of pronunciation, or to make any modifications in the system here recommended, that system must be clearly explained when the curriculum is submitted to the Board. In no case can the use of any system be sanctioned in which proper attention is not given to quantity; in which, for instance, *păter* is pronounced as *pāter*, *lĭcet* as *līcet*, *bŏnus* as *bōnus*. Latin will not be considered to be efficiently taught where quantity is ignored, nor will any teacher be considered qualified to teach Latin who is not sufficiently acquainted with the rules of Latin quantity to read Latin prose and verse correctly.

Special attention should be paid to the teaching of pronunciation in the lower forms. A reasonable discretion may be used in changing the pronunciation of pupils who have already for some time been learning Latin on another system. But it is obvious that a teacher cannot use two different pronunciations when teaching two classes or sets of pupils without great trouble and almost certain confusion, and, in view of the fact that a standard pronunciation is likely to become within a few years practically universal, it is very desirable that, even at the cost of some temporary additional effort, pupils should become accustomed to its use as early as possible.

RULES FOR THE PRONUNCIATION OF LATIN.

Quantity.

In pronunciation the quantities of the vowels must be strictly observed: *e.g.*, *lăbor*, not as English *lābour*; *mĭnor*, not as English *mīnor*; *nŏta*, not as English *nōte*. This is essential for the proper appreciation in verse of metre, and in both prose and verse of sound, rhythm, and distinctions of meaning (*e.g.*, *lăbor*, I glide, *lăbor*, toil; *lĕgo*, I bequeath, *lĕgo*, I pick; *liber*, free, *liber*, a book; *sŏlum*, only, *sŏlum*, ground).

Vowels.

The following is approximately the pronunciation of the vowels:

ā (fātum), as *a* in fāther, not as *ay* in plāy.

ă (răpit), the same sound shortened, as the first *a* in *a*ha.

ē (mēta), as *a* in *fāte*, not as *e* in mēte.
ĕ (frĕta), as *e* in frĕt.
ī (fīdo), as *ee* in fīēld, not as *i* in fīne.
ĭ (plĭco), as *i* in fĭt.
ō (nōtus), as *o* in hōme.
ŏ (nŏta), as *o* in nŏt.
ū (tūto), as *oo* in fūūl, not as *u* (yoo) in acūte.
ŭ (cŭtis), the same sound shortened, as *u* in *full*, not as *u* (yoo) in accŭrate, nor as *u* in shŭn.
y only occurs in words borrowed from Greek, and corresponds, not to any vowel-sound ordinarily used in English, but to French *u* or German *ü*.

Diphthongs.

The sounds of the diphthongs may be arrived at by running the two component vowel-sounds rapidly together, the second being pronounced lightly. The most important are:

ae (portae) = a͡e, nearly as *ai* in Is*ai*ah (broadly pronounced), not as *ay* in plāȳ.

au (aurum) = a͡u, nearly as *ou* in h*our*, not as *aw* in *aw*ful.

oe (poena) = o͡e, nearly as *oi* in b*oi*l, not as *ea* in d*ea*n, nor as *ay* in plāȳ.

Diphthongs of rare occurrence are ui, eu, ei, which are similarly to be pronounced as u͡i, e͡u, e͡i, or nearly as in English sweet, new, grey.

Consonants.

c, g, t, s are always hard.
c (cepi, accepi, scio), as *c* in *c*at, *cc* in Mala*cc*a, *sc* in *sc*andal, not as in acid, ac*c*ept, fas*c*inate.
g (gero, agger), as *g* in *g*et and *gg* in ra*gg*ed, not as in *g*in or exa*gg*erate.
t (fortis, fortia), as *t* in na*t*ive.
s (rosa, res), as *s* in *s*it, thi*s*, not as *s* in ri*s*e.

In accordance with this rule, -ci-, -si-, -ti-, *e.g.*, ocius, sponsio, natio, are never to be pronounced like *-sh-*, as in appre*ci*ate, respon*si*ons, na*ti*on.

i and u consonantal.
i (j), *e.g.*, iacio (jacio), as *y* in *y*ou, not as *j* in *j*am.
u (v), *e.g.*, uolo (volo), practically as *w* in *w*e, not as *v* in *v*ery. But the latter pronunciation may be adopted if preferred.

r is always trilled, even in the middle and at the end of words.

When a Latin consonant is doubled, both should be pronounced: *e.g.*, vacca and pullus are to be pronounced vac-ca, pul-lus, as in English boo*k*-*c*ase, oi*l*-*l*amp.

THE TEACHING OF GEOMETRY AND GRAPHIC ALGEBRA IN SECONDARY SCHOOLS.[1]

IT is now nearly seven years since the Committee of the Mathematical Association made certain recommendations about the teaching of elementary geometry. These recommendations were soon adopted in almost all our secondary schools, and we ought, therefore, to be able by this time to draw some general conclusions as to the effect of the changes that have been made in teaching this subject. With this object in view the Board of Education has collated the experience gained by its officers, and has embodied it in a circular for official use.

It is admitted that the general effect of the recent changes in the teaching of geometry has been beneficial. There are not wanting people who think that we have gone too far; and no doubt this is true of some few teachers who think that practical work is everything. But the writer of the Board of Education circular is of opinion that the majority of teachers have not gone far enough in breaking away from "the bad parts of the Euclidean tradition." In fact, the treatment suggested in the circular is somewhat drastic, and little or no merit appears to be found in any part of Euclid.

In the first place, we are told that greater speed is necessary in teaching beginners. This is a wise recommendation. Geometry lessons are apt to be slow, especially if the teacher spends much time in drawing elaborate figures on the blackboard; but whether an ordinary class of pupils can be so hurried as to master satisfactorily in one year the contents of Euclid, Books I. and III., is doubtful. That clever pupils can do so is quite conceivable. The officers of the Board of Education, however, think that this amount of work is possible, and that better results will be secured if it is attempted. The circular proceeds to show how it can be effected without increasing the time usually allotted to the study of geometry.

For convenience of discussion the work is divided into three stages, and the remarks are to be taken as referring to girls' schools as much as to boys' schools.

All experienced teachers recognise the need of a preparatory course before actual deductive geometry is commenced. This course should be short, and the important point to be aimed at is that pupils should clearly understand the meaning of geometrical terms and concepts. In directing attention to this point the Board is acting most wisely, for there is no doubt that, since pupils have ceased to learn definitions, they have become most lax in their use of geometrical terms. It is well, therefore, at first to concentrate attention on this one point, and to consider a knowledge of geometrical constructions and skill in the use of instruments as minor matters.

Valuable hints are given about the treatment of the idea of direction, and many young teachers will gain assistance in their work from this part of the circular. The section, too, on definitions is to be welcomed. The writer of it takes up an intermediate position, and recognises that definitions have a value in themselves, although progress in geometry does not depend on them.

The second stage in geometrical teaching is said to consist in the establishment of the fundamental propositions, viz., Euclid I., 13–15, 27–29, 32; with 4, 8, and 26. It is here that the suggestions offered in the circular will be found to differ most widely from the methods of instruction usually adopted in our secondary schools. We are first told that these propositions must be taken in the order specified, so as to

[1] "Teaching of Geometry and Graphic Algebra in Secondary Schools." Circular 711. (Wyman.) 1*d*.

secure unity of subject-matter. Logical order is considered to be of little importance. Secondly, all these propositions are to be studied and their enunciations learnt by heart without any formal proofs. Teachers and writers have painfully realised the difficulties inseparable from this part of geometry; but simply to omit the proofs is perhaps hardly the way to conquer the difficulties. Nor will teachers be ready to allow that the three propositions on congruent triangles are either self-evident or can be "mastered by the class in a few minutes" by drawing single triangles on the blackboard. Furthermore, no riders are to be taken in this stage; whereas teachers would probably urge that the early introduction of riders assists comprehension, gives interest to the subject, and so makes pupils eager to pursue the study of geometry.

The suggestions made in the second stage will find favour with engineers and physicists, who look upon mathematics from a practical point of view. On the other hand, mathematicians will approve of the sound advice that is given under the heading of the third stage. There is, however, little in this last stage that is not familiar to the experienced teacher of mathematics. Riders are held to be most important; proofs must be rigidly based on the fundamental propositions noted in the second stage; new propositions should be presented as riders, the enunciations themselves being treated as matters for discovery by the pupil rather than as dogmatic assertions to be given out by the master. All this is excellent, and, as substantial progress is to be made with this third stage during the first year of study, much of the criticism that might be urged against the recommendations given in the second stage falls to the ground.

This part of the circular concludes with some good advice about cultivating the habit of considering gradual modifications of a figure and on the advisability of liberating boys' minds from the "tyranny of paper" by introducing them to the study of solid geometry at an early period.

The issue of this circular, with its proposals about teaching geometry, will be welcomed by teachers, even if they do not always agree with the writer, for they will find some of his recommendations suggestive and helpful to them in their work. Although it is possible to point out apparent inconsistencies, we are nevertheless presented with a good and practical method of instruction, and one that will certainly have considerable influence on the work done in secondary schools.

The second part of the circular deals with graphs. Writers of modern text-books on arithmetic, on algebra, or on geometry have all felt it incumbent on them to introduce one or more chapters on graphs, and each writer tries to treat the subject in a new way. The result has been confusion and uncertainty both as to the proper place for the study of graphs and as to the objects aimed at in teaching elementary graphs. The present circular points out that graphical representation may best be introduced as an intermediate between arithmetic and algebra, and may well take the place of the evaluations which are usually found at the beginning of algebraical text-books. We thoroughly approve of this attempt to secure a suitable place for so important a subject in the curricula of secondary schools. If this result can be achieved, not only will much time be saved, but the object aimed at can be clearly defined and set before both teachers and taught

This object, according to the circular, should be to give boys an idea of the coherence of results and of the meaning of certain algebraical terms and expressions. Graphs will cease to be regarded as a mild introduction to the study of analytical geometry. Starting with a knowledge of arithmetic, the pupil will learn to plot statistics, questions on transit, and non-linear functions. Equations will only be introduced in algebra later on, and will always be associated with arithmetical verification. Graphs will also be used in algebra to illustrate the theory of indices, and for the solution not only of quadratics, but also of cubics and equations of higher dimensions. In this way boys will learn to realise the value of graphical representation, and will be ready to use it in trigonometry and mechanics, as well as in algebra and geometry.

EXTRACTS FROM THE CIRCULAR.

GEOMETRY.

The Board's officers have now had a good deal of experience of the work of different schools in geometry. Much remains to be done before the best results are everywhere obtained; but unintelligent learning by rote has practically disappeared, and classes, for the most part, understand what they are doing, though often they lack power of insight and have but a narrow extent of knowledge.

Some schools find it possible to cover effectively in a single year the substance of Euclid, Books I. and III., while many schools (perhaps the majority) spend three years or more over the same work.

If it were true that, where the work is slower, it is more thorough and attended with a greater development of intelligence, this would not matter, but the reverse is the case. It is where the work proceeds quickly that it is best, and nearly always where it proceeds slowly it is poor. This is not in general due to a greater or less allowance of time during the week, nor to more or less skill or care on the part of the teachers; it is due to differences of method consequent on different ideas as to what is necessary in the early stages.

It should be more widely recognised that the whole geometrical content of Euclid (as ordinarily read) is very small, and that at least the whole of this should be mastered in every secondary school.

First Stage.

The first stage of work in geometry is now generally recognised to consist in gaining familiarity with and clearness of perception of the fundamental geometrical concepts—solid, surface, line, point, direction, angle, and the like—with some experience in the use of geometrical instruments, and therefore consists in the main of observation and practical work.

The most important end in this stage is to secure thorough comprehension of the concepts.

These are, of course, not to be dealt with by definitions—definitions, if used at all, come at the end, not at the beginning, and must be formulated only when pupils have already a clear conception of the thing to be defined, when in some cases the formulation of a definition may be a good exercise in composition. The essential thing is that the concepts should be grasped and the names rightly used.

It is advisable to begin with such a question as "How many measurements must be made to describe the size of this box?" so bringing out into clearness the association of solids with three dimensions.

The chief practical work to be done here is to have solids made out of cardboard, and to have them sketched in simple positions.

The associated adjectives (plane, curved, straight) may be dealt with at the same time. "Straight" needs no explanation, and all attempts at definition are waste of time. Most boys will be familiar with the test for planeness from their woodwork. But with pupils of twelve and upwards it is the abstract side that is important, and the actual handwork may be reduced to very little, or a solid can be given occasionally to construct for homework, while later stages are being dealt with in school. In any case, it is not necessary or advisable to give directions as to the construction of the plane figures (squares, triangles, &c.) involved; boys can always find this out sufficiently well for themselves, and attention to such points diverts attention from the essential point—the solid itself.

It should be noted that this work is common to the early stages of mathematics and science, and care should be taken that there is neither needless duplication of work nor any radical difference of treatment.

The next concept, direction, is seldom as well treated, with the result that trouble arises later on with angles and parallels.

It is impossible to discuss, much more to define, direction in the abstract—just as it would be to discuss colour.

But just as children gain the general idea of colour from recognising and naming colours—red, blue, green—so they gain the idea of direction (and gain it accurately) by recognising and naming certain standard directions—vertical, north, south, &c.

At the outset it is essential to keep away from pencil and paper, and the introductory question should be "Show me a vertical line," then "How would you test whether it is really vertical or not?" so introducing the familiar knowledge of the plumb-line. Then "Show me a horizontal line," "How would you test it?" The test must be independent of the vertical—*i.e.*, the spirit-level must be suggested.

Boys should know how the windows of their room face, and how they themselves face as they sit.

Then the master may ask, "Are all vertical lines in the same direction?" "Are all horizontal lines?" thus leading to a clear conception of parallels as lines in the same direction.

The concept "angle" comes next. Such simple questions as "What angle do you turn through at drill when you get the order 'right turn'?" are more effective in giving a vivid sense of the meaning of angle than a great deal of work on paper with a protractor. It is frequently found that boys who are supposed to know all about angles break down over the question "A man walks north, then turns 40° to his right; draw his path," showing that they have been blinded to reality by preoccupation with figures.

They should also be trained, whenever they measure an angle, to estimate it first before applying the protractor; only so can errors, due to reading the protractor from the wrong end, be avoided.

Little or no practice should be given in the mere measurement of angles drawn at random. The better form is "Make a triangle the sides of which are . . . and measure the largest angle."

All the fundamental concepts will now have been dealt with, and nothing further is necessarily contained in the first stage of the work. If some further experience of practical drawing and measurement is desired before proceeding with theory, it can much better be found in drawing plans, elevations, and sections of simple solids—work which is of value in developing geometrical imagination, but which is practically independent of deductive geometry.

Definitions may be regarded as an end in themselves, and it is sometimes a useful exercise to make boys formulate a definition of something they already understand, such as a square, a circle, or a plane. The memorising of definitions intelligently arrived at and expressed in elegant form has also a value of its own. But these are side issues, progress in geometry not depending on them.

Axioms are still less necessary, and the best course is probably never to mention them. This is true of both kinds, general axioms and geometrical, for different reasons.

If a boy has difficulty in drawing the conclusion "because $A=B$ and $B=C$ $\therefore$ $A=C$," he will not be helped by reference to the abstract general statement "things that are equal to the same thing are equal to one another." He must make the inference, as a matter of course, without reference to any authority, assumption or general proposition, or he does not in reality make it at all. Similarly, unless a boy sees, as a matter of course, that if $2x=10$ $\therefore$ $x=5$, reference to an axiom will not help him.

Second Stage.

As soon as the idea of angle has been made clear, the fundamental propositions regarding angles should be discussed. Following this necessarily comes the congruency of triangles, in connection with which a good deal of practical work will be done—the construction of triangles from various data and the solution of problems in heights and distances by means of drawing. This is the proper time to secure neatness and accuracy of drawing, and it is, in fact, by criticism of their numerical results that boys can best be taught appreciation of accurate work, and consequently appreciation, not only of neatness and care on their own part, but also of the value of having good instruments to work with. Much more than this, of course, is gained by such work; first and foremost, attention must be directed to the necessity and sufficiency of three data properly chosen for determining a triangle, but also questions on heights and distances (if not confined to too easy cases) give valuable training to the imagination as well as training in the art of grasping the meaning of a statement and expressing it in a graphic form.

The second stage, then, consists in the establishment of the fundamental propositions, viz., Euclid I., 13–15, 27–29, 32; with 4, 8, and 26.

The subsequent work is better in those schools where these propositions are more rapidly dealt with.

It is, again, almost wholly in regard to these propositions that there are serious differences of order, due to

differences of method. It is clear that by unity of subject-matter these propositions should be taken together, or rather in two groups, as indicated above, the one containing all the fundamental facts about angles, the other the three cases of congruent triangles. An essential vice, for teaching purposes, of Euclid's order, was that he separated propositions closely allied, introducing them, not in the natural order defined by the subject-matter, but in a quite artificial order, for convenience of logical proof. Of the books now chiefly in use many follow the natural subject order here laid down, but others still adhere (essentially for Euclid's reasons and in his manner) to his awkward order, though in a less extreme form. Even those writers who follow the more natural order do not wholly get over the difficulties involved in Euclidean proofs. All are obliged to interpolate an alien proposition (usually I. 5) before I. 8, so breaking what ought to be the unity of impression produced by the group 4, 8, and 26. Nearly all still give Euclid's proof of I. 13—their first proposition—a proof that gives endless vexation to teachers and taught, and which is wholly unnecessary with our modern ideas of angles. They give a proof of I. 29, which is, in fact, so difficult that in one well-known book it is marked with an asterisk—to be omitted on first reading. Further, all these propositions are matters of common knowledge to all who have been through the preliminary course of practical work. They are (or should be, if the preliminary course has been properly treated) self-evident to the pupil and the so-called proofs do not make them more evident, but only more obscure. Here, more than at any point, it is necessary to remember that Euclid did not write for children, but for men. To commence the subject by proving what to them seems to need no proof is a safe way to make boys think that the whole subject is artificial and unreal. It is much better to begin Euclidean, that is, deductive, proofs at the point where their necessity can be appreciated—that is, after these fundamental propositions—and where, therefore, the proof is a natural process, not subject to arbitrary or artificial rules.

These fundamental propositions are those on which all the subsequent deduction depends, and the essential thing in regard to them is not to analyse them and reduce them to the minimum number of axioms, or, rather, postulates (which is Euclid's method), but to present them in such a way that their truth is as obvious and real to the pupil as the difference between white and black or between his right hand and his left. Any process which interferes with this directness of vision and apprehension is vicious, whatever claim it may have to logical value, and avenges itself in gross mistakes in subsequent work, due to haziness or lack of grasp of the fundamental facts which have been so laboriously "proved."

With beginners, then, Euclidean proofs of these propositions are out of place, and attention must be concentrated, not on formal proofs, but on vivid presentation and accurate, firm apprehension of the propositions themselves.

Propositions 27–29 and 32 can be presented from the point of view of rotation. The common method of letting a line rotate is good, but probably it is even more effective to let boys think of a man walking along a broken line (27–29) or round a figure (32 cor. 2). Those whose concern it is to inquire into the ultimate bases of mathematics are in disagreement as to how far such presentation can be regarded as proof, but to the schoolmaster the question is irrelevant.

It is found, as a matter of experience, that the propositions so presented appear to the pupils as luminously self-evident, and the whole can be done very quickly and very effectively.

Congruent Triangles.

Congruent triangles may very effectively be dealt with thus: let the teacher draw *one* triangle on the board and ask "What elements of this triangle shall I measure and copy to make a copy of the whole?" *i.e.*, let the second triangle be constructed step by step, so that it is clearly seen that when three measurements have been taken (if properly chosen) the whole is determined without ambiguity. This is, of course, essentially the same process as superposition, but the gradual building up of the second figure is easily followed, and the fact that the result is determined after three steps, properly chosen, self-evident; while the comparison of two figures, both already complete, is a much more difficult process to effect and full of traps for the beginner.

Dealt with in this way, all the three congruence propositions may be mastered by the class in a few minutes, and attention may at once be turned to their use. The enunciations must, of course, be learnt. The orthodox proofs may, if desired, be taken later, when they present no difficulty.

It is not necessary or advisable to interrupt the work by the introduction of riders. "Practical" work should be given, especially questions in heights and distances; but all deductive work should be deferred until these fundamental propositions—the tools with which all subsequent problems must be attacked—are mastered. To interpolate riders (unless it be a few on angles after the first section has been completed, and before congruence is dealt with) tends rather to dull the brilliance of the impression which it is essential that the propositions themselves should make.

Third Stage.

Henceforward, though intuition or experience should be largely used to discover propositions, rigid deductive proof on the basis of the fundamental propositions defined above must be insisted upon.

All new ground should, as far as possible, be gained by original work. New propositions should be presented as riders. Although the standard propositions must ultimately be learnt, they are learnt much more easily and with more interest if the proofs have first been found out.

Propositions should not be taken singly, but as far as possible in groups.

Very frequently it is possible, instead of presenting to a class a ready-made proposition which they have merely to prove, to ask them such a question as will lead them to suggest the proposition itself. For instance, instead of saying "Prove that if the diagonal of a parallelogram bisects one of the angles the figure is a rhombus," it is much better to ask "Is it true that the diagonal of a parallelogram bisects the angle?" When this has been answered, proceed: "If it does, what kind of a parallelogram must it be?" Finally, when this has been answered, get the proof.

As the work advances it is more important to know the propositions themselves than to know their proofs.

In revising the work it is good to ask "What propositions do you use in proving such-and-such a proposition?" This is not only an effective way of testing knowledge, but helps to build the whole up into a coherent structure.

Practical work should not be regarded as an end in itself, nor as a thing to be done for the sake of doing it. Its importance varies from point to point, rising highest where a new idea has to be effectively assimilated.

It should be frankly recognised that unless the power of doing riders has been developed the study of the subject is a failure.

The riders that can best be attacked first are those that involve the use of congruent triangles, with, of course, the fundamental propositions on angles and parallels. Nearly all boys can learn to do these, and until they have done so nothing else is worth attention.

It is most important to cultivate the habit of considering gradual modifications of a figure. "What happens to the diagonals of a parallelogram as the angle between adjacent sides alters?"

The idea of change or motion should be introduced wherever possible. It is for this reason, among others, that the modern idea of a tangent is superior to Euclid's. It is partly for this reason, again, that the plotting of loci is such valuable training.

It is important that, whenever possible, the practical work should go beyond what can be dealt with theoretically. Just as "heights and distances" are given to be solved by drawing long before they can be done by trigonometry, so loci and envelopes should be given quite irrespective of whether they come to straight lines and circles or can be accounted for by the theory in the boy's possession.

It should be noticed that the most effective practical work (though, perhaps, that ceases to be the right name) can often be done without instruments, even without pencil and paper. In order to answer the question "Are the diagonals of a parallelogram equal?" it is not necessary laboriously to draw several exact parallelograms. It is quite sufficient to sketch a few, or, better still, merely to picture them mentally.

It is a great defect in most school courses in geometry that they are entirely confined to two dimensions. Even if solid geometry in the usual sense is not attempted, every occasion should be taken to liberate boys' minds from what becomes the tyranny of paper. Thus the questions "What is the locus of a point equidistant from two given points, at a constant distance from a given straight line or from a given point?" should be extended to space. But beyond this it should be possible, if the earlier stages of the work are rapidly and effectively dealt with as here suggested, to find time for a short course of solid geometry. Euclid's eleventh book is generally found dull and difficult, but all that is of real value in it can be dealt with much more rapidly, especially if full use is made of the idea of the motion of a line or of a plane. Similarly, it should be found possible to include a study of the solid figures; this will be much facilitated if their general outlines have been made familiar at the very commencement, as is usually the case.

GRAPHS.

Graphic work may with advantage be introduced very early, when the transition is being made from arithmetic to algebra.

The process of plotting statistics, if not already familiar, must be explained, and a little practice given. It should be confined to such statistics as are part of boys' real knowledge.

By experience boys must realise the difference between a mere chart of a set of discontinuous and possibly unrelated values—*e.g.*, the maximum temperatures on successive days and a continuous graph admitting the use of interpolation.

Then pass from mere statistics to such questions as:

It is 120 miles from London to Bristol. What will be the average speeds of trains covering the distance in 2, 3, 4 . . . hours? Plot the results.

The question may be carried further by supposing the time of transit further altered, and as we thus get away from practical speeds of trains we can use the speed of sound or light at the one end, the speed of cyclist, coach, wagon, pedestrian at the other, to suggest the idea of the complete curve. We thus arrive at the utility of the algebraic expression $\frac{120}{x}$, together with the graphic exhibition of all its values, including, incidentally, in a simple and effective fashion the new concept of infinity and the new mathematical concept of zero.

Further cases may be taken from the questions in the arithmetic books, especially those under the heading "proportion." These will, of course, include cases both of inverse and of direct proportion with others (such as the *amount* of a sum at simple interest) where there is proportionate *increase* only, with others such as cases of compound interest where there is no proportionality.

Once an algebraic expression such as $\frac{120}{x}$ has been formulated, the master may take further such expressions almost at random, and let boys graph them. A good type to begin with is $(x-2)(x-4)$. This introduces at once various points—the real meaning of brackets, the law of signs in multiplication, the question how negative values of the quantity under investigation are to be represented graphically, and the extension of "x" to negative values also. It is just as well not to introduce the use of the letter "y" as the name of the function of "x" at first.

Variety, of course, should be provided, and the better boys should go on to more elaborate functions—*e.g.*, $(x-2)(x-4)(x-6)$ or $\frac{(x-2)(x-6)}{x-4}$—while the slower are working at the simpler ones.

From the very beginning, then, boys should realise that they can graph any explicit algebraic function which is presented to them. It is better, in the main, to keep to the factorial form used above, as the arithmetic involved is then much easier, and boys are more at liberty to attend to the essential work of plotting—they can work more rapidly, and therefore reach more rapidly the desired end, viz., realisation of continuity and faith in the reasonableness and coherence of the laws of arithmetic or algebra.

This work is really valuable in itself, and may largely take the place of the wearisome and meaningless evaluations to be found in the first chapter of the ordinary algebra text-book.

When boys are able to work fairly correctly, a few linear forms (*e.g.*, $2x+5$) may with advantage be given. It is better not to begin with these.

When boys have drawn a curve decently—*e.g.*, $(x-2)(x-4)$—they should be made to proceed to the solution of an equation—*e.g.*, $(x-2)(x-4)=5$. The solution will at first be rough. It should at once be tested arithmetically; the result compared with the curve will show whether the answer first given is too big or too small. It may be necessary to redraw the curve, perhaps to draw it on a different scale—the better boys at least should get a result correct to the second place of decimals. Further practice, of course, is involved in the arithmetic of fractions and decimals, as well as increased care in drawing and measurement. The better boys at least should solve a few cubic or higher equations; they will then feel that an instrument of great power has been put into their hands.

All this work can with advantage be done at the outset, quite apart from any instruction in ordinary algebra.

It may be noted incidentally that it is best not to begin graphic work on squared paper. At first boys should work on plain paper or blackboards, using a graduated ruler when necessary or working by eye alone. Only when they have got hold of the idea should they be introduced to squared paper as a means of saving labour.

Suppose a class has to be introduced for the first time to the extended idea of indices. Let the master say "Plot 2^x." The class, of course, will take the values 2, 4, 8, 16, &c., and will doubtless proceed, as a matter of course, to join the corresponding points by a curve.

This at once suggests the question "What right have you to draw this curve; what does $2^{1\cdot5}$ mean?" It has no meaning, but the curve gives it a value, viz., 2·8. Then proceed to inquire how such an expression as $2^{\frac{3}{2}}$ might arise—by taking the square root of 2^3. But this result agrees with the value given by the curve. Take similarly other cases—*e.g.*, $2^{\frac{5}{2}}$ and $2^{\frac{1}{2}}$.

Then notice that the curve stops abruptly at $x=1$; but hitherto our curves have not stopped abruptly. Where does the curve look as if it might be going to? Not to the origin. This naturally leads to an investigation of 2^0 and then of 2^{-1}, &c.

The meanings of fractional and negative indices having thus been established, boys can be set to plot 10^0, $10^{\frac{1}{4}}$, $10^{\frac{1}{2}}$, $10^{\frac{3}{4}}$, 10, and to use their graph to obtain the indices of powers of 10 corresponding to the natural numbers—*i.e.*, to obtain the basis of a table of logarithms. The results can easily be got correct to two places of decimals. The four-figure tables may then be introduced, and will find acceptance.

Again, when simultaneous quadratics are under consideration they should receive some graphic illustration. The form $xy=c^2$ will already have become familiar, as it occurs at the very outset. The form $x^2+y^2=c^2$, of course, should be interpreted.

SUMMARY.

First Stage.

To gain familiarity with and clearness of perception of fundamental geometrical concepts by means of observation of the common facts of life and practical work. The scope and accuracy of this practical work should be limited strictly to this end.

The concepts to be dealt with are solid, surface, line, point, volume, area, length, direction, angle, parallelism.

Practical work on shapes of plane figures, &c., should be omitted here; constructions will be acquired in later stages as they arise naturally.

Definitions should be avoided, but emphasis should be laid on the right use of words.

Axioms and postulates should not be learnt, or even mentioned.

Second Stage.

A knowledge is required of certain fundamental propositions on angles, parallels, and congruence of triangles as a broader basis of "axiom and postulate" than that adopted by Euclid on which to build deductive geometry. These should be based on intuition and reinforced by practical work, and the enunciations should be accurately learnt.

Neatness of drawing is here further practised, and its accuracy checked numerically.

Riders should not be introduced at this stage.

Third Stage.

A logical course of deductive geometry, based on the fundamental concepts and propositions, approached by original work, new propositions being presented as riders and practical work increased when a new idea has to be assimilated.

Practical work is never to be an end in itself; it should generally be in advance of previous knowledge, and may with advantage go beyond what it is intended to deal with theoretically.

The student must be capable of doing riders.

A course of solid geometry is very desirable.

GRAPHS.

This work should be an introduction to elementary algebra used to illuminate it, not an introduction to analytical geometry.

The first graphical work, after the usual plotting of discontinuous statistics, should deal with explicit non-linear functions which illustrate the general nature of algebraic expressions.

The solution of equations should follow with arithmetical verification of results.

Graphic work should not be treated as an end in itself.

HOW TO DEVELOP THE CHILD'S EXPRESSION OF IDEAS.[1]

By RUBY K. POLKINGHORNE, B.A.
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THE two main objects of the English lesson seem to me these: (i) to give the child an opportunity of reading and enjoying the stories and poems of the best writers; (ii) to help children to express their own ideas in fit words (spoken or written).

The first object is easily attained, but it is not so easy to help a child to express her thoughts—for the help we offer may only hinder. We do not give children the best help to express themselves when we ask them to write on subjects of our own choosing and then correct their work. It is not so much our business to supply a child with ideas to write about as with words to write with. Every child has ideas; all children are interested in stories; but we must teach them to be interested in words—to see how a story gains or loses by the words that are used. If we are once successful in awakening the interest of children in the significance of words they will take delight in experimenting with them to express their own ideas and those of others, and we shall have less difficulty in teaching them English composition. Now to interest children in expression and lead them to see the importance of selecting right words and arranging them correctly, our instruction must be given orally for the most part. For words are only beautiful when spoken, and the silent word (written or printed) rarely conveys its full meaning to a child.

Some of the work I have done with my form in oral composition is as follows: Whenever my form read in class prose or poetry, I encourage them to talk about the beautiful words and phrases we find, and without encouragement they talk to me about the ideas and characters, which are less strange to them than the words. They find titles for each paragraph as they read it, and find in many paragraphs, in many sentences, and even in words alone, complete stories—stories of their own apart

[1] A paper read at the London County Council Conference of Teachers 1909.

from the one long story of which the paragraph, sentence, and word are only a portion.

One day, when I thought they had some appreciation of words, I told them the story of Balder's Death, and asked if anyone would retell it; and nearly every child very naturally shrank from the task, because they thought they had not knowledge of sufficient words to retell it worthily, and they wanted to tell it without spoiling it. After all, it was too big a task for one child; but I was unwilling to pass on without getting the children's interpretation of it, for the story I knew could not be theirs until they made it their own. So I proposed that the whole form should retell the story, and that they should act the part they thought they could not tell and use actions wherever they helped the words. So far as possible, I let each child choose the part she would like to tell; for example, one child represented Balder, and did and said what she imagined was done and said by him; another chose the part of Thor, another described the palace of Broadblink, another the playtime of the Gods and Goddesses, and so on. I gave them some time at home and at school to prepare the story. It involved written work, for every child wrote down her part and learnt it. When they were puzzled about modes of expression or were at a loss for words they came to me, and I reread the story, but helped them in no other way, leaving it to them to omit or insert what they thought best. So the children thought and wrote. The result was good. Twenty-eight children retold the story to me, using simple but effective language, with simple actions and with all the reverence that so great a story demands. Far be it from me to advocate the acting of stories as a help to composition if it means that great ideas are mocked at and made foolish.

Two causes which enabled the children to retell the story so well were, I believe: (i) they had actively appreciated and understood the story, and they enjoyed uniting movement to speech and describing the actions of others; (ii) I left them entirely free to interpret the story how they liked—making no suggestions. They retold it to me very often in this way, and each time they made some improvement on their own account, because they heard very well the word or sentence that did not express what they wanted. There were very few grammatical errors.

However large one's form is, I find it is possible to get children to act stories in this way. And in one respect the larger the form the more interesting the result. For in the case of a large form we can divide the children into sets, and require each set to retell the story, and then compare results to discover which set produces the best version.

If we want children to retell or act stories in the manner I have described it is necessary: (i) That any version of the story we give them should be scholarly; the words we use must suit the story, and we can leave it to the children to make both words and story suit themselves. We should not, I think, use stories retold for children by grown-up people; for if we transpose legends into their simple language, instead of leading children to do that for themselves, there is not only less useful work for them to do, but they will make nearly no increase in their knowledge of words. When they retell the story they can always leave out the part they do not understand, and ask about strange words and use simple words for them. If they have enjoyed hearing the story, they will enjoy expressing it in their own way.

(ii) Stories, if children are to interpret them, must have very simple plots—though they need not be told in simple language—they must be lucid and suggestive to allow scope for the child's originality; from this point of view the story of Balder is too complete. Therefore I have found that Celtic legends are most suitable for children to act, because they are so often simple, incomplete, and therefore suggestive, affording opportunity for the introduction of a child's fancy in perfect harmony with the intimations of the original narrative; for example, the story of Connla of the Golden Hair and the Fairy Maiden, the Voyage of Bran, the Fate of the Children of Lir (this, indeed, is not one story, but many, and takes at least a term to tell), the little fairy that weeps because it has no soul, and those endless stories about beautiful fairies enticing princes or princesses, men or women to a green hill, to some wondrous isle in the Western Sea, or to the happy other world, call it what we will.

These the children can retell in many different ways, according to their mental powers and temperaments. And the acting must be very simple—a story-teller to describe the place of meeting, a princess and fairy to talk together, these are generally all the characters needed. What matters most is what is said. Words must change the schoolroom and the children. If we encourage children to act these simple stories, where descriptions are as important as the plot, and where beautiful expressions are more important than actions, we may perhaps fairly hope that in after days they will care less for sensational stories.

Another reason for simplicity in the stories selected is, I think, this: that we do not want to introduce too frequently angry, cross, or rude people, for it is not well that children should act these parts. My children wisely introduced into nearly all their plays story-tellers, not only to describe the different scenes, but to describe actions—the outcome of passions and emotions, such as grief (when these had to be introduced into the story). It seems to me a pity that children should be told tales from Chaucer, Spenser, Scott, &c., sometimes in commonplace language, when they can have such stories in a perfect form when they are old enough. It were better surely to place before them some of those Russian, Scandinavian, or Spanish legends which children can enjoy and play with and alter children expressing in their own way and in their own ideas, and from which they can learn so much real history.

(iii) The object of allowing children to act stories is to help them to put their thoughts into words, to understand what can or cannot be expressed by words; therefore no attempt should be made to teach them to act. We are not helping children to express themselves if we teach them to act some scene from their reading books, and make them use the actions we like and the words of the text. To teach a child to act is to teach it to be grown up.

Let the children find their own words and their own actions for some child-like idea; then, if they retell the story badly time after time, it means that the idea has found no corresponding idea in the child's mind, and we must find another story. So far I have spoken only of children expressing in their own way and in their own words old ideas and fragments of stories. I sometimes let each girl in my form during an English lesson make up a story of her own to read or tell in class. When I tell them they may write a story, I mean they may write about anything they like—a description of a house, a conversation, a play.

They do not write it in their exercise books, but on paper which I do not see, for all children—indeed, many people—cannot think earnestly and write neatly and plainly at the same time.

The stories I get from my children in this way show always very clearly the influence of the prose and poetry

they have read during the term, and also in what they are most interested. These are the subjects they like to choose to make their stories about—a river, a road, a great warrior, a child falling asleep and being visited by a goblin or fairy (this idea is frequently used, but the originality of each child makes each version worth listening to), a child talked to by its dolls, children becoming fairies for one hour, a birthday party of a child of eleven, who entertains a little beggar girl, who turns out to be—eleven also.

In every case the writer of the story is the central figure—she is the road, the river, the sleeping child, the little beggar girl, as the case may be. Many of the stories were excellent in the vigour of the language and the earnestness of the actors, for some children like to get the help of two or three others in telling their stories, and in that case a kind of drama is secured. The stories that were not so good failed because the language was inadequate, and therefore the descriptions unconvincing, not because of the inadequacy of the ideas.

The form listens eagerly to the stories and plays the part of critic well. The girls readily understood from this lesson which were the weak points in their composition—where and in what way their words had failed to make their thoughts clear to others.

If we let children often write these compositions in the first person, let them imagine they are roads, rivers, warriors, or what they choose, and let them use the words they write, they will never find a composition dull work. And if we resolutely put aside nearly all stories written for children and let them have scholarly versions of legends, they will delight in simplifying them themselves; and a child who has heard these stories read, and has retold them herself at eleven and twelve, is, I think, ready at thirteen to read Shakespeare's plays.

HISTORY AND CURRENT EVENTS.

THE late editor of the *Pall Mall Gazette*, Sir Douglas Straight, was recently entertained at dinner by some of his friends. The Lord Chancellor presided, and in the speech of the evening said "he thought the modern editor was the only person who possessed the power and the authority that used to belong to the mediæval monarch. He could say what he liked, he could write what he liked, he could think what he liked, and no one had the pluck to say him nay." We agree with the Chancellor in comparing the modern editor with the mediæval king. But we take leave to ask whether either of them had or has the powers that he attributed to them. There is a limit to the powers of the most absolute monarch, whether sitting on a throne or in an editorial chair. There are forms of government, monarchic, aristocratic, or democratic, as Aristotle taught us long ago; but there are also supports of Government, whether army, wealth, or public opinion, and all monarchs depend for their power on that which supports them, if, indeed, this be not a platitude. To quote only two instances, James II. of England and Louis XVI. of France learnt that they could not act for long in defiance of public opinion.

THE leading English cocoa-manufacturing firms have been making inquiry into the conditions of labour in the Portuguese African islands of S. Thomé and Principe, and have found that the natives there employed are practically in a state of slavery. Efforts have been made, but apparently so far in vain, to put an end to these conditions, and the manufacturers have therefore decided to purchase no more of their raw material from these islands. Thus has been solved, at least for a time, one part of the great modern problem as to conditions of labour, and we know from our daily papers that efforts are being made to put an end to "sweating" in some of our home industries. Thus in various ways, governmental and individualistic, we are trying to recover that control of industry in the interests both of the worker and the consumer, which was one of the leading features in mediæval trade and craft guilds, but which broke down under the stress of the growth in industry and commerce which was the result of sixteenth-century and subsequent social revolutions.

AUSTRALIA, for all its desert interior, is a large country which would support many more than its present inhabitants. Yet in Victoria population does not increase so fast as it might do, or as is desirable in the interests of that colony or of the Empire as a whole. The explanation is said to be that in the 'thirties of last century great tracts of land were granted to the early settlers as sheep-runs, and the descendants of these grantees still hold the land and use it for that purpose. We are reminded of that social condition of Tudor England when for a time it was more profitable to cultivate sheep than corn. "The profit of the fleece was greater than that of the plough." That was the economic aspect of our Reformation times, and explains the unrest in the reign of Edward VI. Gradually things righted themselves, and it began again to be worth while cultivating corn. But in the latter days of the Roman republic similar great *latifundia* destroyed Italy for lack of men, and the social conditions of that country were some of the reasons that led to the establishment of the Empire. We all remember the Gracchi and Agrarian laws.

DR. STEIN has been telling the Royal Geographical Society of his discoveries in Central Asia. In the desert north-east of Khotan he has found among ruins of cities pieces of paper manuscript containing ancient Buddhist texts in Sanskrit, Chinese, and an "unknown" language. It is "evident" that this "unknown" text is a translation of the Chinese document, and thus it is hoped to obtain a key to the former. We are reminded of the Rosetta Stone, which every visitor to the British Museum in London has doubtless seen. That famous document was brought from Egypt in the early years of last century. It contains an inscription in Egyptian hieroglyphics, modified hieroglyphics, and Greek. The assumption that these were translations one of the other led Champollion and other scholars to the understanding of Egyptian hieroglyphics, a branch of historical study which is still growing and which has led to a vast amount of knowledge as to ancient history. Similarly, the twentieth century may thus see a large increase in the knowledge of Buddhist history, of which comparatively little is now understood.

ITEMS OF INTEREST.

GENERAL.

THE Association of Assistant-masters will hold a meeting of the council and a general meeting of members at the Leys School, Cambridge, on May 29th. Important resolutions affecting teachers in secondary schools will be submitted to these meetings, including a series of resolutions with regard to the Teachers' Register and the formation of the new Registration Council, and also with regard to the Regulations for Secondary Schools.

The new wing of the North London Collegiate School was opened early last month. The accommodation it provides consists of four new class-rooms, a suite of rooms for the practical study of chemistry and botany, a conservatory, a domestic science school, new staff rooms, and extensions to the hall, dining-room, and gymnasium. A distinguished gathering assembled at the opening ceremony, which was of an exceptionally interesting character.

It will be remembered that in our issue for January last (vol. xi., p. 6) an article was published by Mr. E. Bruce Forrest, of the William Ellis School, Gospel Oak, London, on the equipment of a history room. We are glad to learn that Mr. Bruce Forrest is being assisted in his work of arranging such a room in the William Ellis School by the Art for Schools Association (Passmore Edwards Settlement, Tavistock Place, London, W.C.). Teachers of history who contemplate the addition of such a room in their own schools would do well to communicate with the association.

We understand that preparations are being made for the celebration in July next of the 400th anniversary of the foundation of St. Paul's School. It is suggested by the Old Pauline Club that the occasion should be celebrated by an open-air performance at the school of Milton's "Comus." The proposal has the approval of the school authorities and of Sir J. West Ridgeway, president of the Old Pauline Club. A committee has been accordingly appointed to organise such a performance, and it appeals to all friends of the school for subscriptions towards this object. Subscriptions may be sent to Mr. A. E. Bernays, 3, Priory Road, Kew, Surrey.

The first annual report of the governing body of the Imperial College of Science and Technology states that the council of the Institution of Electrical Engineers is prepared favourably to consider co-operation with the governing body in the equipment of an electrical engineering laboratory at the Imperial College in memory of Lord Kelvin. The report also makes reference to the generous donation of £4,000 which Mr. C. Hawksley has promised towards the provision of a laboratory for the study of hydraulics, in memory of his father, Thomas Hawksley, M.Inst.C.E., the well-known hydraulic engineer.

The complaint has been made from time to time that some of the boys who enter secondary schools with scholarships from the elementary schools are not capable of benefiting by the higher education. In reply to a question in the House of Commons, Mr. Runciman is reported to have said: "It appears to be within the power of the school authorities to make regulations for the removal of any boy who is found incapable of benefiting by the education given in the school, provided that such regulations apply equally to those who pay tuition fees and to those who hold free places under the Board's regulations."

The Department of Agriculture and Technical Education in Egypt is charged by the Minister of Education with the conduct of the Government technical and agricultural schools, also with inspection and encouragement of non-Government institutions providing similar instruction. We learn from *Education* that gratifying progress is being made under the directorship of Mr. Sidney Wells, formerly principal of Battersea Polytechnic. The inhabitants of the provinces concerned have shown themselves willing to subscribe to the development of industrial education for the poorer classes, and six new schools are being added to the existing four non-Government trade schools. The Government schools now consist of one higher school, two special schools, and three trade schools.

The council of the Tonic Sol-fa College some few months ago sent a memorial to the Board of Education, signed by some sixty of its members, many of whom are expert teachers of vocal music and hold official positions under educational authorities in the three kingdoms. The object of the memorial was mainly to prevent the compulsory use of the staff notation in infants' schools and in classes corresponding to standards I., II., and III. of elementary schools. In its reply, the Board of Education expresses itself as "glad to have the opportunity of removing some misconceptions," and makes clear that the "suggestions" are not to be regarded as "regulations," and that head-teachers are free to introduce the staff notation in that part of their school where they consider it can be wisely done.

The revising examiners in the March Oxford Local examinations of this year report that the commonest fault in the answers to many of the papers in both the Senior and the Junior examination is irrelevance. Candidates either do not read the questions with any attention, or merely write down whatever they have learned, without caring exactly what is asked for. In answer to a question calling for a comparison of two things, they write a description of one or both, and do not compare them. Instead of a character of a historical personage they give a sketch of his career. If they are asked for the causes of some event they give the results. Teachers and pupils alike should realise that from the point of view of success in examinations, and also for the far more important purpose of obtaining effective education, irrelevance is disastrous. Examination papers, the report says, are set to test, not only the candidates' knowledge generally, but also their power of selecting and grouping the facts that they know. No one can do effective work of any kind without the power of grasping what is wanted and keeping to the point.

Replying recently to a question in the House of Commons, Mr. Runciman, President of the Board of Education, said that the number of applications for admission to training colleges in 1908 was 14,101 (4,758 men and 9,343 women), but in order to ascertain the number of students applying some deduction must be made from this figure in respect of those students who applied for admission to more than one college. This figure does not include applications for three new colleges opened in 1908, to which the number actually admitted was 170. The number of recognised students admitted was 5,771 (1,795 men and 3,976 women). The residue, viz., 8,330, less the number of students applying for admission to more than one college, represents approximately the number refused admission owing to lack of accommodation. No case of refusal on grounds connected with religious faith or observances was reported to the Board of Education during the year.

The annual report for the year 1908 of the Horticultural College for Women, Swanley, Kent, compares well with its predecessors in its record of steady progress and development. At present the number of persons who can impart instruction in practical rural knowledge is very small, and unless a great opportunity is to be lost the Swanley College, in common with other horticultural institutions, should be enabled, by means of increased resources, to afford to hundreds the advantages at present available for scores of students only. We are glad to learn that a

holiday course for helping women teachers who desire to extend their knowledge of nature-study is to be held at the college from July 31st to August 14th next. Most of the instruction will be given, weather permitting, out of doors, rambles in the country under the guidance of experienced instructors being the chief feature of the course. So far as possible the open-air studies will take place within easy distance of the college, but excursions will be arranged to districts with varying soils and climate, and the accompanying variety of natural objects. The fees for the course are moderate, and intending students should communicate with the principal at the college.

A RETURN showing the extent to which, and the manner in which, local authorities in England and Wales have applied funds for the purposes of education other than elementary education during 1906–7 has been issued by the Board of Education. We note that the income from all sources for meeting the year's expenditure showed a total increase, as compared with the previous year, of nearly £213,000, and that the increased amount raised from rates was equivalent to about 97 per cent. of that total. The total expenditure on this higher education by local authorities, not including expenditure out of loans, reached £3,680,718. In the return, the term higher education embraces secondary education (including not only secondary schools, but the instruction of pupil-teachers and intending pupil-teachers), the training of teachers, the provision of scholarships, evening schools or the various forms of technical instruction, and higher education in science and art generally. Adopting these divisions, the expenditure under some of the headings were: secondary education, £1,068,655; evening schools, £1,475,358; exhibitions, £448,769; training of teachers, £98,599; administrative expenses, £198,073; and other expenses, £120,320.

IN the Isle of Wight most of the elementary schools have school gardens.

THE Children Act received hearty praise from the president (Mr. H. S. Badger, Bradford) and other speakers at the twenty-fourth annual conference of the National Association of School Attendance Officers. Mr. Badger urged the total abolition of the half-time system, which was physically, mentally, and morally bad.

THE Education Department of New Zealand supplies copies of an official *School Journal* for issue to boys and girls each month of the school session. We have received copies for last March of the parts for use in the middle and upper forms, and have no doubt that they prove very useful. The history of the colony is, naturally, very well given. Another commendable feature is the large and well-leaded type employed for the junior classes.

"MANY a man goes to college after a decade or more of work following his graduation from the secondary school." This sentence is extracted from an article in the *School Review* of Chicago, and it throws a flash-light on the part played by American universities in the social development of cities in the States.

WE welcome the appearance of the first number of the *Eugenics Review*, a copy of which reached us shortly before going to press. The contents include a Foreword by Mr. Francis Galton, an article on the Poor Law Commission Report by Sir Edward Brabrook, and articles and reviews by Prof. J. A. Thomson and others. The new periodical is to be published quarterly, at 1s. net., by the Eugenics Education Society, 6, York Buildings, Adelphi, London.

THE staff and boys of the Bootham School, York, are to be congratulated upon the very satisfactory seventy-fifth annual report of their Natural History, Literary and Polytechnic Society, a copy of which has reached us. We have been much impressed by the painstaking appeal to as many boys' interests as possible. So varied is the programme of clubs and societies that we should think every boy in the school is provided with a congenial leisure-hour pursuit.

THE *Schoolmaster* of April 10th contains a review of the work of the National Union of Teachers during the past year, and the interesting memorandum on the medical examination and supervision of school children issued by the Scotch Education Department. In the opinion of the Department "it is eminently desirable that all teachers should have some instruction in personal and school hygiene"; and further that "all head teachers should be fully qualified to assist materially in the preliminary work of medical inspection and to direct the children in hygienic habits." We wish the N.U.T. every success in its fight for smaller classes; the recent circular on school staffing is encouraging, and all who value education will hope that Mr. Runciman will succeed in his endeavour to abolish the huge classes which lower the standard of education wherever they exist.

THE twenty-fifth annual report of the Association of Assistant-mistresses in Secondary Schools contains a "Short Sketch of the History and Aims of the A.A.M.," written by Miss Bancroft, who reviews the side-by-side progress of the national organisation of secondary education and that of the association. On her re-election as president, the same author dealt in a broad-minded way with the present objects and ideals which the society should pursue now that it has an assured position and consequent responsibility. From the general report we gather that the question of a pension scheme on a national basis is being carefully considered. The number of members is given as 838, representing 188 schools. The types of schools may be given as Endowed, Church Schools Company, Girls' Public Day School Trust, proprietary, county, and municipal schools.

THE April issue of the *Federal Magazine* (published by the League of the Empire) is an Empire Day number. It contains an address issued by the Victoria Education Department, written in strong, simple language free from bombast. In the same journal are photographs of Empire Day tableaux from schools in New Zealand, Canada, Africa, Australia, and India. The grouping is singularly devoid of art in every case, so that the photographs represent only a collection of costumes and their wearers. It would be interesting to learn what the actual tableaux were—it is quite possible that remarkable pageants of Empire have actually been given under the Flag in former years, and that much of interest could be learnt from photographic reproductions such as would reveal the sentiments expressed by the artists of the tableaux. In the present case we learn that much industry and care for historical and ethnographical accuracy were given to the design of the costumes. A number of suitable songs, and suggestions for the keeping of Empire Day, together with an account of the origin of the movement, are included in this issue.

SCOTTISH.

THE leaving certificate examinations have once more come and gone. The admirable qualities that have marked the examination questions during the past three or four

years have again been strongly in evidence. Nothing but praise can be given to the great majority of the papers, and pupils who fail to make a good appearance have only themselves to blame. Exception, however, must be made of the paper on history, both lower and higher. The questions in the lower grade must surely have been framed by the patentee of a historical chart. There were two questions, and two only, and both were concerned with assigning events and personages to their proper period. There was no testing of intelligence, no probing into the causal connections of events, nothing but an appeal to the mechanical memory. After all the talk about history, especially Scottish history, it is extremely disappointing to be landed back into the pre-reform days once more, and to find our education authorities proclaiming over the length and breadth of the land that "history is only a bundle of dates."

The spring meeting of the English Association (Scottish Branch) was held this year in Edinburgh University. Miss Elizabeth Lee, London, secretary of the association, read a paper on "Walter Savage Landor." She justified her choice of subject by claiming for Landor that both the substance and the form of his writings took us into an atmosphere of beauty that was in strong contrast with the enforced ugliness of a great part of our surroundings. In the afternoon the president, Prof. Grierson, Aberdeen, said that there was a tendency at present to over-methodise the teaching of English. He questioned whether the studied neglect of English in the old days was not preferable to the systematised, square and compass, methods of the present. Under the former *régime* the pupils browsed at will among books, whereas now all their reading was prescribed with almost mathematical precision. With the gradual but inevitable disappearance of Latin and Greek from schools and universities, English would form the finest medium for a genuine humanistic education. Touch could be kept with the older "humanities" by means of translations, the value of which he rated much higher than is commonly done.

The Scottish Branch of the English Association continues to pursue with much enthusiasm its "investigations into the present conditions of the Scottish dialects." A special committee has been entrusted with this work, and already much valuable material has been collated. The dialect committee seeks to make the record of the language as complete as possible by (i) gathering in words, meanings, and usages which have not yet been recorded in any dictionary; (ii) preparing an exact description of the pronunciation of existing Scottish words; (iii) dividing the country into dialect areas corresponding to differences of pronunciation. It will thus be seen that the work of the committee is really preliminary to the compilation of a new Scottish dictionary, to supplement, and in some respects to supersede, Jamieson's, which was published more than 100 years ago.

American and Canadian teachers to the number of close upon 300 have during the past winter visited the leading cities in Scotland. In Glasgow and Edinburgh representative local committees were formed to supervise the arrangements for their reception and to make their visit as profitable, both educationally and socially, as possible. It is satisfactory to find that the courtesies and kindnesses extended to these visitors from across the seas have been heartily appreciated, and many are the references in American educational journals to the "genuine warmth of Scottish hospitality." There can be no doubt that the interchange of visits between members of the teaching profession in this country and America should give new life and vitality to the teaching force of both countries.

The seventh biennial congress of the Class Teachers' Association was held this year in the Good Templar's Halls, Paisley. Mr. Robert Weir, president, delivered a thoughtful address on the "School Curriculum." Whether they had regard to the elementary school or the secondary school, it would be found that the curriculum was not a well-planned entity based on clear and definite ideas, but an accumulation of subjects put together without any causal connection and without any co-ordinating principle. It had "growed," like Topsy, and there was no governing idea in it. Ossa had been piled on Pelion in the hope that the educational Olympus would be reached, but it only seemed further off than ever. In conclusion, Mr. Weir put in a strong plea for a redistribution, simplification, and reorganisation of the subjects of the school curriculum in order to emphasise the essential unity of all knowledge as opposed to the bewildering complexity that was created in the minds of pupils by the existing conditions.

The Scotch Education Department has again directed attention to the fact that the French and Prussian Governments have initiated schemes under which a number of young teachers in Scottish secondary schools may be employed in France or Prussia for one year as temporary assistants. As a rule, such teachers will receive board and lodging free at the institution to which they are attached, or, failing such an arrangement, they will be granted a special maintenance allowance. The main duty of such teachers will be to conduct small conversation groups of five or six pupils. They will have no supervision duty, although they may be encouraged to direct the games of the boys or girls and teach them the English terminology. The stated hours of work will in no case exceed two hours daily; for the rest of the day the student-teachers are free to pursue their own studies in foreign languages, and will receive every assistance possible from the school authorities. Nomination to these positions will be made by the Education Department after considering the qualification of applicants. Applications should be made immediately to the Secretary, Scotch Education Department, Dover House, London.

The Committee of Council on Education in Scotland has decided that, pending a general revision of the Code to adapt it to the conditions created by the Education (Scotland) Act of 1908, the provisions of last year's Code shall remain in force until further notice. While some of the references in the Code are now obsolete, there is nothing which requires immediate amendment as being inconsistent with the tenor of the Act of 1908.

At the recent meeting of the Classical Association of Scotland, the uniform course for the Intermediate Certificate came in for much adverse criticism. Greek and German, owing to the excessive demands in the way of science and drawing, are practically being crushed out of all public secondary schools. Again, in the insistence upon the minimum age of fifteen for the award of the certificate, undue restriction is placed upon the development of the brightest pupils. The fact is that the whole of the secondary education course is now arranged expressly to meet the requirements of intending teachers. In the opinion of the Education Department they seem to be the only class requiring higher education, and so all the conditions are framed to meet their convenience.

IRISH.

THE names of the newly appointed permanent inspectors under the Intermediate Education Board have been published. They are six in number, and are "approved" by his Excellency the Lord Lieutenant and the Lords Commissioners of his Majesty's Treasury. The names are: E. Ensor, R. C. B. Kerin, J. E. Maguire, J. J. O'Neill, T. Rea, Junior Fellow R.U.I., and C. E. Wright. The order is alphabetical, and it does not appear from the official announcement which are the senior and which the junior appointments, nor is any indication given as to their probable duties or spheres of action. For these things souls must be possessed in patience. Nor has the Intermediate Board yet issued its Programme and Rules for next year. There was, we believe, an informal understanding with the Consultative Committee that this would appear before Easter. It would be intolerable if it should again be delayed until midsummer.

THE Department has published a very interesting pamphlet of thirty-four pages, entitled "A Report on a Visit to Germany in connection with the Operations of the Patents and Designs Act, 1907." The commission to Germany consisted of Mr. G. Fletcher, assistant-secretary to the Department in respect of technical instruction; Mr. J. Horner, Belfast Industrial Development Association; and Mr. E. J. Riordan, secretary, Irish Industrial Development Association and Cork Industrial Development Association. The primary object of the visit was to interest foreign manufacturers who might be affected by the Act in the opportunities for industrial enterprise now offering in Ireland. The general conclusions arrived at are, briefly, that (i) manufacturers in certain industries will probably find it to their interest to set up branches of their works within the United Kingdom; (ii) to attract such manufacturers there is need of special and persistent efforts to make known local facilities and advantages; (iii) the working of the Act will be gradual; some foreign firms will set up branches in the United Kingdom, but many will rather sacrifice their patents, affording opportunities for fresh industrial home enterprise; and (iv) under the conditions existing in Ireland certain chemical industries, such as those concerned with the manufacture of aniline dyes and certain electrical industries, are suitable for introduction there. The pamphlet, although small, contains some very striking and important information put in an attractive form.

THE Irish "Development Grant," originally an educational grant corresponding to similar grants which were entirely devoted to education in England and Scotland, amounts this year to £208,374. As everybody knows, the Government has taken over this grant practically to assist the Land Purchase Act of 1903. In this £153,700 will be absorbed, and £10,000 more goes to the Labourers' Cottage Fund under the Labourers Act. More than £20,000 will be spent in railways and harbours. For education there remains £4,432 for training colleges to meet the needs of King's scholars, and £7,000 for technical instruction, in place of a Parliamentary grant originally made to the Department.

THE Department of Agriculture and Technical Instruction announces that a limited number of scholarships will be awarded on the result of an examination next August for students who intend to specialise in agriculture, horticulture, forestry, or creamery management. The scholarships are, in the first instance, for one year, but may be prolonged for three or even four years. Application must be made to the Department before August 4th.

THE Margaret Stokes lectures at Alexandra College, Dublin, this year were delivered by Prof. W. Ridgeway, Disney professor of archæology at Cambridge. The course, consisting of three lectures, was exceptionally original and interesting, and dealt with the Bronze Age, the Early Iron Age, and the Early Middle Age in Ireland.

WELSH.

SIX sets of designs for the Welsh National Library building on the Grogythan site at Aberystwyth have been received from the architects selected for a limited competition. The estimated cost of the whole scheme is from £75,000 to £80,000, though the plans are so arranged that the work can be executed in sections. The competition will be decided by an assessor appointed by the president of the Royal Institute of British Architects, who will act in consultation with the president and librarian of the Welsh National Library. A draft scheme has been drawn up for the accommodation that will be required for the Welsh National Museum in Cathays Park, Cardiff. The draft lease for 999 years from the Corporation for the site has been approved. It is stated that the council has agreed that the National Museum shall be opened on Sundays, and has thereby become entitled to a bequest of £3,000 given on that condition.

THE episodes for the Welsh National Pageant have been selected as follows: (i) Caradog asks the assistance of the King of the Silures to fight against the Romans. (ii) Funeral of King Cynbor. Arthur is crowned King by Merlin, 512 A.D. (iii) Hywel Dda proclaims the laws, 940 A.D. (iv) Ifor Bach, 1156. Capture of Cardiff Castle by Ifor Bach from William FitzRobert, Earl of Gloucester. (v) From Shakespeare's "Henry V.," after the battle of Agincourt. This episode includes the eating of the leek by Pistol. There are also introduced scenes depicting Owen Tudor and Queen Catherine and their dance; the crowning of Henry Tudor after Bosworth Battle, the only King of England crowned on a battlefield; and Henry VIII. and the Act of Union between England and Wales in 1535 at Ludlow.

THE Incorporated Association of Assistant-masters in Secondary Schools and Association of Assistant-mistresses (Welsh branches) have issued a memorial to the secondary education authorities of Wales directing attention to the inadequate salaries paid to assistant-masters and mistresses in Wales. They point out that the cost of professional training for a secondary-school teacher varies roughly from £200 to £1,000, and that salaries of assistant teachers bear a very inadequate proportion to this outlay and capital. The average salary of an assistant-master in Welsh intermediate schools for 1906–7 was £138 4*s*. 7*d*. "It is practically impossible for a schoolmaster receiving such a salary to marry and bring up a family, and it is not to the advantage of the community that those who may be attracted to the profession should be compelled to face such a disability."

THE average salary of an assistant-mistress in Welsh intermediate schools for 1906–7 was £112 3*s*. 9*d*. "This can scarcely be considered a living wage for a professional woman. It can only keep her with economy during the school terms, whilst she must be dependent for the holidays on her relations or friends. Should help from such sources not be forthcoming, she can have hardly anything to spend on dress, recreation, or travel, or to put by for sickness and old age." The proposals made are: (i) that all mistresses (fully qualified) should receive a minimum annual salary of £120, rising by yearly increments of

£10 to £220; (ii) that senior mistresses should receive £220 to £300; (iii) that the lowest salary paid to any masters registered in Column B should be at least £150, rising by annual increments of not less than £10 to £300, with a higher rate for special responsibilities.

The report of the commission to the Treasury with regard to the University of Wales and the three University Colleges has been published. An interesting account is given of the degree courses and general work of the colleges. The commissioners state that the percentage of students who attain to a degree is "decidedly good." They direct attention to the necessity in university work of close association between teaching and research. "If a professor or a lecturer is to keep abreast of his subject, if he is to communicate a strong intellectual impulse to his students, he must have time and opportunity to pursue his own independent studies and inquiries. This important consideration has not been forgotten in Wales, and the amount of independent work accomplished by teachers and graduate students is somewhat remarkable, considering how much routine work the teachers have been compelled to undertake. All the colleges have furnished us with lists of books, papers, and investigations produced by their teachers and graduate members. We do not think it necessary to reprint these lists, but we have examined them with care, and they confirm the favourable opinion which we formed by inquiry on the spot. As to the results of the education given, we refer to the statistics of graduation. We are satisfied that the graduates of the University are holding their own in the competition for appointments of a scientific or educational nature with the graduates of other universities."

The commissioners consider that the teaching at present should be left to the colleges, and the University should bring the colleges into co-operation. They further suggest that the colleges would gain in efficiency by raising the salaries of the professors and other heads of departments, and that this should be regarded as a first charge on the Treasury grant. The average professional salary of £500 is considered to be a reasonable amount with a pension or superannuation fund. The colleges, in the opinion of the commissioners, would greatly improve their teaching by making further provision for tutorial assistance, while a substantial sum should be devoted to the enlargement of the college libraries and the completion of their scientific equipment. They further are of opinion that the higher education of Wales would be strengthened if an addition were made to the revenue which the University now devotes to the encouragement of research.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

V. Hugo, Préface du Cromwell. Edited by E. Wahl. lvi+139 pp. (Oxford: Clarendon Press.) 2*s.* 6*d.* net.—The Higher French Series edited by M. Delbos contains a number of valuable texts ably edited; but few can compare with the present volume. The student of romanticism in France can learn much from Madame de Staël's "De l'Allemagne" and Stendhal's "Racine et Shakespeare," already issued in this series; he now has the opportunity of studying, with M. Wahl's help, that strange production of Hugo's youth, the preface to his unwieldy "Cromwell." The introduction, written in French, deals in brief but very skilful fashion with the following matters: La Genèse de "Cromwell" et de la Préface; Etat de la Poésie; État du Théâtre; Les Cénacles; Les Luttes romantiques; Hugo et le Nom "Romantique"; Les premières idées littéraires de Hugo; La Critique du Classicisme avant Hugo; Hugo et la Révolution française; Formation du Goût romantique chez Hugo; L'Influence étrangère; la "Préface du Cromwell" et le Romantisme; Les Théories de la Préface; Classiques et Romantiques après la Préface; Les Défauts de la Préface; Le Style; Valeur de la Préface. To the sixty-two pages of text the editor has supplied seventy-seven pages of notes, written in English which rarely conveys any suggestion that it is the work of a foreigner. The notes explain every allusion, and contain parallels and quotations that testify to M. Wahl's wide culture. Occasionally he informs the reader of things that he might assume to be known; it is surely unnecessary to say: "For *Noah*, see Gen. vi., vii., viii." The text has been printed with the care to be expected from the Clarendon Press; the only slips we have noticed are *silhouttes* (p. 14, l. 23), *oudins* (p. 16, l. 19), *des* (p. 31, l. 20), *castillanne* (p. 33, l. 8), *se* (p. 62, l. 18).

Grammaire française élémentaire. By A. A. Somerville. viii+127 pp. (Rivingtons.) 1*s.* 6*d.*—This grammar, written in French, is intended for English pupils. It is by no means the first book written with this object, and it can hardly be maintained that it presents any very novel features; but Mr. Somerville's name suffices to ensure that it is a careful piece of work. In a book containing so many statements of grammatical facts, it is always possible to point out slips and omissions. We should have liked to see more room given to phonetics; and, on the other hand, we should not have regretted the omission of such comparatively rare words as *cal*, *pal*, *pou*, *vantail*, *glu* in a book intended for beginners. Misprints are rather frequent—*e.g.*, *eu* (p. 11) for *ue*, *chréti* (p. 12) for *chrétienne*, *maniere* (p. 16) for *manière*, *précédent* (three times on p. 17) for *précèdent*, *emploiés* (p. 26) for *employés*, *conjugent* (twice on p. 107) for *conjuguent*. Actual misstatements are rare: we direct the author's attention to the fact that the *t* in *parle-t-il* is not *le t de la troisième personne en latin* (p. 65), that adverbs do not merely augment or diminish the force of the words to which they are added (p. 85), that *bien que* is followed by the subjunctive (p. 95), and that it is incorrect to say that the French imperfect is used to express an action begun and not finished *au moment où l'on parle* (p. 34), as the example given shows.

Commercial French Reader. By W. M. Poole and M. Becker. x+147 pp. (Murray.) 1*s.* 6*d.*—This reader consists of the "Morceaux de Lecture" and the "Questionnaires" contained in "Commercial French, Part I.," a capital book on reform lines which, so we learn with pleasure, has already been through five editions. In this cheaper form the book should enjoy a still larger sale. It is the best of its kind.

Classics.

The Story of the Pharaohs. By the Rev. James Baikie. xvi+380 pp.; with 32 full-page illustrations from photographs, 49 illustrations in the text, and 2 maps. (Black.) 7*s.* 6*d.* net.—We are not familiar with Mr. Baikie's name as an Egyptologist, but he is evidently a capable populariser, and he has gone to the best modern authorities for his facts. He has studied Petrie, Budge, Maspero, Breasted, Wiedemann, Ermann, and others; his cuts come mostly from Wilkinson, and his photographs from Signor

Piromali, of Luxor. Mr. Baikie begins with the land and the early inhabitants, the pre-dynastic race or races of Prof. Petrie, and shows that he is quite up-to-date in his knowledge. We then pass to the Pyramid-builders, and the social conditions of the Old Kingdom, the Middle Kingdom, the Hyksos, and so on through the chief dynasties of Egypt until we end with the Persian conquest. A chapter on the Egyptian religion, a date-table, and an index complete the work. When we remember how nearly this history touches Greece and the Israelites, it is certain to interest a large body of readers; and as it is well written we can recommend it.

Six Orations of Cicero. (Allen and Greenough's edition.) Revised by J. B. Greenough and G. L. Kittredge. With a special Vocabulary by J. B. Greenough. 270+226 pp. (Ginn.) 4*s.* 6*d.*—"This volume is not meant" (so the preface tells us) "to supersede the revised edition of Cicero's select orations; but it has been prepared to meet the needs of those teachers who prefer marked quantities and who require but six orations for use in their classes." The six are: *Pro Lege Manilia, In Catilinam*, I.–IV., *Pro Archia.* The introductions, after the American fashion, include not only a life of Cicero, but essays on Roman oratory (nine pages), Cicero as orator, Latin and English style, ancient oratorical delivery, and the Roman Constitution (twenty-seven pages of small print; quite a treatise on political antiquities). Maps, plans, and views, casts of coins and sculpture, illustrate the text and notes. Each speech is analysed elaborately, and notes explain every difficulty; there is a running summary in English, and all long vowels are marked. For the solitary student the book would be admirable: for the schoolboy it contains a great deal that is unnecessary or undesirable in the notes, nor is a vocabulary wanted with such a book. It is clear that the needs of the American student differ from ours; for this is not an isolated specimen. Von Minckwitz has edited ten orations of Cicero in just the same luxurious way, and there is the longer edition by the same editors as this.

Martial, Selected Epigrams. Edited, with Introduction and Notes, by E. Post. lii+402 pp. (Ginn.) 6*s.* 6*d.*

Plato, Apology and Crito, with Extracts from the Phaedo and Symposium and from Xenophon's Memorabilia. Edited by L. Dyer, revised by T. D. Seymour. With a Vocabulary. 246 pp. (Ginn.) 6*s.* 6*d.*

Both these volumes have their notes at the foot of the page, and they have certain differences from the English text-books. Like others of the same origin, they seem to range from the beginner to the advanced student.

Thus, a college text-book in England would not be provided with a vocabulary, like the Plato, or a description of the hexameter, like the Martial; nor should it (but we are not quite sure that it would not) have the notes on elementary points of grammar that are so common in American books. On the other hand, no one but an advanced student could use the elaborate bibliography that is prefixed to the Martial.

The Martial is very well done. More than most authors, Martial needs notes, with his allusiveness and his frequent references to custom: and these notes are at once full and scholarly; they are based on independent study, and show a wide reading in the compiler. For convenience, the numbering of the standard text is kept. We can recommend this book.

The Plato is a revised edition, the introduction and notes being rewritten, and the extracts added with their notes. It is very useful to have these pieces relating to the death of Socrates all together, with Xenophon's view of his master. We think that Xenophon's work is apt to be neglected unduly. It is not only a good corrective to Plato, but shows how Socrates impressed even a blunt man of the world.

Correction.—Mr. John Sargeaunt's surname was incorrectly printed as *Sergeant* in the review of "The Famulus of Terence" which appeared last month. The reviewer proffers his sincere apology for the misspelling.

English.

The Teaching of Grammar. By Laura Brackenbury. vi+138 pp. (Murray.) 2*s.*—Miss Brackenbury has written an extremely interesting book on method in the teaching of grammar, and after reading it we fully agree with her that the science of grammar possesses unique claims to a place among school subjects. But then it must be taught on the lines suggested by Miss Brackenbury. In present circumstances we fear, as she herself does, that too much time is often given to the subject; but if properly taught—preferably not before the age of fourteen—half an hour a week would cover all the ground required. For after all, as Miss Brackenbury well says, children need not "remember" grammar; no learning of book-work is wanted, and examination in it is largely waste of time. If we single out for special mention any details as particularly happy and logical and comparatively simple, we may refer to the treatment of relative pronouns and the subjunctive mood. Miss Brackenbury's success in these matters—usually slurred over by teachers on account of their supposed difficulty—is to be traced to the extremely plain foundation on which she works. She has taken the sentence as the unit of expression, and has resolved it into its two essential components. Throughout her teaching these two essentials are the standard to which she continually refers. We commend the book to all language teachers.

English Composition. By F. T. Baker and H. V. Abbott. (Bell.) 3*s.* 6*d.*—In spite of a singularly lame and uninteresting introduction, there is much in this book that English teachers may study with advantage. That it is suitable as a text-book for English pupils we greatly doubt. It is written in that pungent form of exhortation to which American children are doubtless accustomed, but its chief value seems to us to lie rather in the very careful selections chosen as illustrations of the rules laid down. Its very elaborateness should be in itself a recommendation among us, for hitherto much of our want of success in the teaching of composition has been the result of a certain vagueness and disinclination to systematise detail. Without committing ourselves to the more or less academic distinctions of themes narrative, descriptive, expository, argumentative, and the rest, we are sure that a careful comparison of the selections here given could not but have a vivifying influence on the work of young writers. The chapters on "Sentences" and the "Choice of Words" are good—although we are inclined to think that the paragraph rather than the sentence is the better unit for our younger pupils, and although we are not exposed to such American temptations as "calculate" and "donate"; for the same reason the "list of forbidden things," with its "schoolgirl slang" and "stupid blunders," is hardly required in an English text-book. But when all these divergences from our needs are noticed, and when we have noted wonderingly many of the headings—as, for example, "On sentences that have snap"—we can still praise the book as the exponent, in essentials, of sound methods, and still more as providing, with a few extravagances, a mass of live, original themes, that can hardly do otherwise than

stimulate the imagination of boys and girls, and save them from that stereotyped sameness of ideas which is the death of all style and development.

William Morris. By Alfred Noyes. vi+156 pp. (Macmillan.) 2*s.* net.—There is not a page of this book unworthy of William Morris or of Mr. Alfred Noyes; but of its many charms we are content to emphasise only one: we know of no more delightful introduction to criticism. Put in the way of a member of the Sixth Form, it cannot fail to open up an entirely new view of literature and art; he will feel at once that beauty is indeed truth, and that clean, sweet English, being essentially a thing of beauty, is a joy for ever. He will not be content with the generous quotations given him by Mr. Noyes, but he will thirst for full draughts of Morris himself, and will in him undoubtedly find a well of romance and poetry and English undefiled from which he may draw for many a day, to his soul's large contentment. Whatever other place this book may adorn, let it at least be put in every school library.

History.

The "A.L." Historical Sequence Charts. By J. C. Eastburn. Four Charts (each 45 in. by 35 in.) printed in colours. (Leeds: Arnold and Son.) Single chart, 4*s.*; the set of four, 10*s.* 6*d.* on one roller, or 14*s.* on separate rollers.—These historical charts cover the whole period of English history from 1066 to 1901. The first depicts the Age of Feudalism (1066–1272); the second the Growth of Parliament (1272–1485); the third the Age of Discovery (1485–1689); the fourth the Era of Progress (1689–1901). The charts are divided into horizontal bands, which represent respectively reigns, prominent persons, constitutional events, political events, treaties, wars, literature, and so on. These bands are drawn to scale (five years to an inch), and important events are indicated upon them by vertical bars. The position of the bars on the horizontal bands shows at a glance the time at which an event occurred, and generally, in order to make the information quite precise, the actual date is appended. There is further a simple yet ingenious scheme of colouring, which serves not only to make the charts attractive, but also to impress in a graphic manner some important historical and even moral facts. For instance, a green king is pictured as "incapable," a red king as a tyrant. There can be no doubt that these four charts hung upon the walls of the history class-room would do much to lend reality to *time* in the same way as the familiar geographical maps do to *space*. The children who looked upon them would insensibly learn the order of the kings, the character of their reigns, and the sequence of leading events, and would find a convenient framework into which the information of their text-books could easily be fitted.

The Remaking of Modern Europe. By J. A. R. Marriott. xxv+260 pp. (Methuen.) 2*s.* 6*d.*—Mr. Marriott tells the story of Europe from 1789 to 1878 in twenty-one chapters, devoting eleven of them (131 pages) to the French Revolution and Napoleon, and 110 pages to the subsequent events. The story is well told, with commendable conciseness, and few things important for the beginner are omitted. But as it is intended for students at school and university, we could wish that the author had avoided some phrases which, passable in the lecture-room, do not look well in print. We allude to such words as "smash," "shoddy," and the phrase (p. 83) "knocked Austria out of the game." The terminology is also strange at times. Young students can excuse the words "England" and "Great Britain" being used alternately, but they should not be taught to speak of "Holland" when the seven provinces are meant, nor of a kingdom of Belgium, nor of Spanish Netherlands in 1789. The Empire of Austria is apparently dated (pp. 5, 81) from 1806, instead of 1804. Italy consists of ten States on p. 6, but of fifteen on p. 15. Lombardy was scarcely *incorporated* with Austria (pp. 6, 58). And why does Mr. Marriott speak of the Cinq Cent or Cinq cents, and of Pio Nono (just after Gregory XVI.), as if these were untranslatable words? Why does he speak of Nice, especially in connection with Garibaldi, and yet is careful to speak of Mainz, though he alternates between Cologne and Köln? But we refrain from directing attention to other small blemishes, because we are thankful for any good books on European history, and this is one of them. Specially useful are the pertinent sayings of great men, good examples of which are quoted on p. 126 and elsewhere. There are maps, bibliographies, genealogies, and an index.

Modern History. By A. J. Evans. 328 pp. (Horace Marshall.) 2*s.* 6*d.*—This little volume forms the third and concluding part of Messrs. Marshall's "Primer of General History." It deals with the history of Europe from about the year 1500 A.D. to 1871 A.D. It presents in a highly condensed and businesslike shape the narrative of the leading political events of the long and crowded era which stretches from the days when England, France, and Spain became unified nations to those when Germany and Italy attained to unity. So much has had to be said in short compass that all adornments both of matter and style have necessarily had to be discarded. No one will read this book as a holiday diversion. But it will be of real use to those who, in studying modern English history, wish to gain from a Continental point of view a connected knowledge of those political problems with which Britain occasionally interfered, and those European movements in which Britain's part, though important, was but incidental. Mr. Evans writes with wide and accurate learning, and he may be confidently taken as a guide. It may be mentioned that the book contains eleven excellent portraits, six useful genealogical tables, and five unsatisfactory maps.

Geography.

Handbook of Commercial Geography. Seventh edition. By G. G. Chisholm. 710 pp.; maps and diagrams. (Longmans.) 15*s.*—A book which has gone through seven editions and six reprints inside of twenty years would command respect even if it were a melodramatic novel; but when its subject-matter is of so "stiff" a material as commercial geography, admiration needs must press hard on the heels of respect. And, indeed, Mr. Chisholm's *magnum opus* is admirable. It is now the standard work wherever the subject is studied. The lecturer on commercial geography who attempts to compile his lectures without reference to "Chisholm" would be as foolish as a golfer who sets out with gutta balls to play a match against an opponent armed with rubber cores! The seventh edition has been revised throughout and extended. Notable amongst the revisions is the substitution of the quinquennial period 1901–5 for 1896–1900 in the matter of statistical tables, and the inclusion of *consignments* in the imports and exports of British foreign trade. This has been rendered possible by the publication (since 1904) of "consignment" figures on the official annual statement. The new arrangement alters many conceptions. We refer readers to p. 602, for example. Suffice it that whereas formerly it was the custom to refer all imports into this country to the port of export, and so to the country which owned that port, now particulars are given as to the

countries from which the goods are consigned. Germany on the ordinary *import* tables appears as selling to us some £38,000,000 worth of goods; she really *consigns* to the United Kingdom nearly £60,000,000 worth. The meaning is obvious—nearly half our German goods come in *via* Rotterdam and Antwerp, and were formerly, therefore, classed as Dutch or Belgian in their origin. This new aspect of affairs concerns the trade of many other countries besides the three here alluded to, and notably Switzerland, Austria, and Italy. The chief extension alluded to is the addition of a valuable chapter of twenty-eight pages on "Trade Routes," illustrated by new maps of trans-continental express railways and a most speaking chart of ocean traffic, wherein the importance of the North Atlantic trade-route fairly astonishes the reader. The only omission from preceding editions is the dropping of the density of population maps; but as these were becoming inaccurate through lapse of time their loss is not to be regretted.

The Round World. By J. Fairgrieve. x+114 pp.; diagram maps. (Black.) 1*s.* 4*d.*—This is the first volume of "Black's School Geography," to be issued under the capable editorship of Prof. Lyde. The editor's name is therefore a guarantee of up-to-dateness for the series. "The Round World" is designed to follow immediately on the primary study of the homeland. Its aim, according to the preface, is "to widen the outlook at once to take in the globe, to consider the continents as sections of the globe, and to lay stress on world conditions of climate." It is very strong on the "human note" (trust the general editor for that!). Each section is introduced by a short historical sketch, and throughout the inter-relation of man and his environment is emphasised. The book opens appropriately with a frontispiece of Columbus and a chapter on Drake. The maps are very sketchy, but very simple; most of them are old friends, acquaintance with which one has made in others of the Lyde-Black books; but they are none the worse for that. Questions are included in the text—indeed, the last chapter (Australia) is nothing but questions designed to act as a sort of revision of what has already been learnt—and the style is in consequence jerky. But the book makes a capital text for oral work, and thereby fulfils one of its principal objects.

Mathematics.

A Course of Plane Geometry for Advanced Students. Part I. By Clement V. Durell. xi+219 pp. (Macmillan.) 5*s.* net.—The course developed in this treatise assumes an acquaintance with the subject-matter of Euclid's first six books, and the range covered in Part I. may be best indicated by quoting the titles of the fourteen chapters into which it is divided. These are, in order, similar figures, ratio theorems, lines and circles connected with a triangle, points connected with a triangle, concurrency and collinearity, vector geometry, the mean centre, harmonic ranges and pencils, the quadrilateral and quadrangle, orthogonal circles, inversion, poles and polars, coaxal circles, and finally centres of similitude. Not much of what may be termed the most recent geometry of the triangle appears in the text, but a few cases of the more important theorems and definitions are given among the examples; the less recent geometry is treated with considerable detail. The chapter on vector geometry will be found serviceable; the treatment presents some novelties, and the exposition is sufficiently full to enable the student to apply its methods to the more elementary geometrical theorems. The text of the various chapters is not overloaded; the theorems are proved with care and precision, but many developments are properly left to the student, and several interesting theorems are placed among the examples. Students for whom this higher geometry is suitable can readily devise proofs, and their interest is greatly stimulated by such exercise. The examples are very numerous, and add to the value of the work. Numerous historical notes are given; we certainly like such notes, and we would almost contend that justice to the memory of the great geometers demands such notes in a work that is designed for advanced students. But we think the value of such notes would be greatly increased if detailed references were given. A reference to a passage in Simson's works where the "Simson line" appears would be valuable; it is all but certain that no such passage exists. It is not quite certain that the astronomer Apollonius, nicknamed Epsilon, was the same person as Apollonius of Perga; one is hardly entitled to state as a fact that the latter was known by that appellation. These, however, are comparatively small matters, and do not detract from the geometrical value of an excellent treatise.

Longmans' Practical Arithmetics. By W. Knowles and H. E. Howard. Teachers' Series, Book 5. 139 pp. Stiff covers, 1*s.* 6*d.* Pupils' Series, Book 6. 80 pp. Paper covers, 5*d.* (Longmans.)—In this series of text-books the treatment of arithmetic is closely associated with that of geometry and mensuration; the applications to mensuration naturally lead to the use of formulæ, and in this way generalised arithmetic or algebra finds a prominent place at a comparatively early period. So far as pure arithmetic is concerned, the two books under notice deal chiefly with the contracted methods of multiplication and division of decimals; the method of reversing the multiplier is adopted, and, though approved by many excellent teachers, always seems to us unsatisfactory. In the teachers' book due attention is given to the illustration of the fundamental laws, and many observations are made that show practical experience of the difficulties of the ordinary pupil. The geometrical discussions form a sensible introduction to the elements of mensuration, which is well represented in the exercises.

An Introduction to Practical Mathematics. By F. M. Saxelby. vii+220 pp. (Longmans.) 2*s.* 6*d.*—This introduction is intended for students of technology, and especially for evening students in engineering and allied sciences. It is assumed that the student has some knowledge of arithmetic and mensuration, and that he will, while studying this book, follow a course in practical geometry. For such students the book seems to be very suitable. The fundamental operations are treated with more care than is usual in books of this class, and quite a large number of examples for practice in algebraic manipulation are given. Graphical methods are well treated, and the examples contain many problems that appeal to the students whom the writer has mainly in view. We can heartily recommend this book for elementary classes of evening students; even the teacher of day classes will find in it much suggestive matter.

Science and Technology.

The Young Engineer. By Haddon Hall. xvii+268 pp. (Methuen.) 5*s.* net.—This book gives clear descriptions and illustrations of modern stationary, locomotive, and marine steam engines, steam turbines, steam boilers, and gas and oil engines. The style will render the matter of particular interest to the amateur and to boys who have a liking for making models. Such readers are specially catered for by the inclusion of numerous descriptions of model engines, together with instructions for constructing them. The author wisely insists on the young mechanic

making his own working drawings before starting on any model, and we would here add the additional advice to keep closely to these drawings throughout the construction. While many of the examples of working drawings given are excellent, others could be improved. Thus, on p. 259 will be found some hand sketches which should certainly be redrawn. The book is likely to prove a useful help to intelligent lads who have also the opportunity of some assistance from an experienced person.

A School Course in Physics: Light and Sound. By F. C. Endecott. 184 pp. (Blackie.) 2s. 6d.—Each chapter in this book represents a week's work, and consists of lecture notes, notes on practical work, questions and exercises, and pupil's notes. The lecture notes consist of a brief statement of main principles and definitions, and blank spaces are left for the student to write out details and proofs; also blank pages are left at the end of each chapter for the entering of experiments carried out by the student. No detailed instructions for the experiments, and no diagrams, are given. The utility of the book depends entirely upon whether the teacher approves of a method in which the student uses limited writing space in his text-book for acquiring facility in describing his work satisfactorily: an experienced student would be able to do justice to the method, but the beginner of average ability is liable to spoil many of the pages.

Macmillan's Wall Pictures of Farm Animals. Nos. 1, 2, 5, 6. Unmounted, 3s. each.—Two numbers of this series (Nos. 3 and 4) were favourably noticed in our issue of January, 1909. We have now before us the remaining numbers, and they fully confirm the high opinion we then expressed of the excellence of the series. No. 1 depicts the Duke of Westminster's thoroughbred horse, "Orme"; No. 2 gives a life-like representation of Lord Llangattock's champion Shire stallion, "Hendre Royal Albert" (No. 19,686 in the Shire Horse Society's Stud Book); while Nos. 5 and 6 give capital pictures of typical Lincoln and Southdown sheep, Large White and Berkshire pigs. The artist, Mr. J. Macfarlane, has done his work well, and the reproductions, in natural colours, are beautiful specimens of lithographic art. We heartily commend these pictures to all who are interested in rural education. They can be obtained in three styles, but we like them best framed. They are then worthy of a place in any room, and form a picture gallery of themselves, and that of a most useful, as well as ornamental, type.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in The School World *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

A Practical Introduction to Indices and Logarithms.

Prof. G. H. Bryan has recently contributed to The School World (December, 1908) an interesting article entitled "Practical Introduction of Logarithms." In most text-books of algebra, I believe, and certainly in one bearing Prof. Bryan's name, "theory of indices" is treated in one chapter and "logarithms," considerably later, in another. Prof. Bryan now suggests logarithms first and indices later—presumably because the practical use of logarithms can be appreciated readily by many boys who cannot understand the usual treatment of indices. I hope that other teachers besides myself will enter a plea for teaching indices and logarithms together.

Let a pupil who has no knowledge of indices other than integral plot on squared paper values of $[y=a^x]$, assigning to a some definite value greater than 1. For instance, a may be 1·1 or 1·2, or simply 2. He gets a series of isolated points corresponding to positive integral values of x only. x unit steps to the right from the origin means x multiplications of the unit ordinate by a. It is easy to reverse the steps, as Prof. Bryan suggests in his article, each unit step to the left denoting *division* by a, and thus interpreting a^0, a^{-1}, a^{-2}, a^{-3}, &c. In fact, we may say that a^5 means 1 multiplied 5 times by a, a^0 means 1 not multiplied by a, a^{-4} means 1 divided 4 times by a.

Now let the pupil consider the meaning and value of such an expression as $\sqrt[n]{a}$, where n is a positive integer. Probably the value $n=2$ gives no difficulty, as he can extract square roots by arithmetic to any desired degree of accuracy. But what if $n=5$? A sharp boy may perhaps suggest that the graph already constructed will enable him to read off approximately the value of $\sqrt[5]{a}$. But perhaps it will be best to proceed somewhat as follows: Let us find the approximate value of $\sqrt[5]{2}$. By direct multiplication,

$$1{\cdot}1^5 = 1{\cdot}61 \text{ approximately,}$$
$$1{\cdot}2^5 = 2{\cdot}49 \text{ approximately,}$$

so that 1·1 is too small and 1·2 is too large.

Also $1{\cdot}15^5 = 2{\cdot}01$ approximately.

We can now plot a portion of the curve $[y=x^5]$ based on the table

x	1·1	1·15	1·2
y	1·61	2·01	2·49

From the graph we read

$$(1{\cdot}149)^5 \text{ is approximately } 2,$$

i.e., $\sqrt[5]{2} = 1{\cdot}149$ approximately.

The pupil will readily see that a still closer approximation can be obtained, if required, by a further application of the same method.

We are now in a position to plot the values of $[y=(\sqrt[5]{a})^{5x}]$. We still get a series of isolated points, closer together than before, *but including all the points that were plotted for* $[y=a^x]$. Now, however, we are able to give to x in turn every one of the series of values

$$\ldots, -\tfrac{2}{5}, -\tfrac{1}{5}, 0, \tfrac{1}{5}, \tfrac{2}{5}, \tfrac{3}{5}, \tfrac{4}{5}, 1, 1\tfrac{1}{5}, 1\tfrac{2}{5}, \ldots.$$

This at once suggests a satisfactory meaning for $a^{\frac{1}{5}}$, namely, 1 multiplied 4 times by $\sqrt[5]{a}$. And, generally, $a^{\frac{p}{q}}$ means 1 multiplied p times by $\sqrt[q]{a}$, $a^{-\frac{p}{q}}$ means 1 divided p times by $\sqrt[q]{a}$.

The properties of indices become apparent. For instance, $a^{\frac{3}{4}} \times a^{\frac{1}{4}}$ means 1 multiplied twice by $\sqrt[4]{a}$ and 3 times by $\sqrt[4]{a}$, *i.e.*, 1 multiplied (8+9) times by $\sqrt[12]{a}$, *i.e.*, $a^{\frac{3}{4}+\frac{1}{4}}$.

There is no limit to the magnitude of the integer n in expressing $[y=a^x]$ as $[y=(\sqrt[n]{a})^{nx}]$, and the values of x may now proceed by successive additions of $\pm\frac{1}{n}$ from 0, so that the graph of $[y=a^x]$ becomes a continuous curve in which, corresponding to all positive values of y extending from 0 to ∞, we have values of x extending from $-\infty$ to $+\infty$, values of y greater than 1 corresponding to positive values of x, and values of y less than 1 to negative values of x.

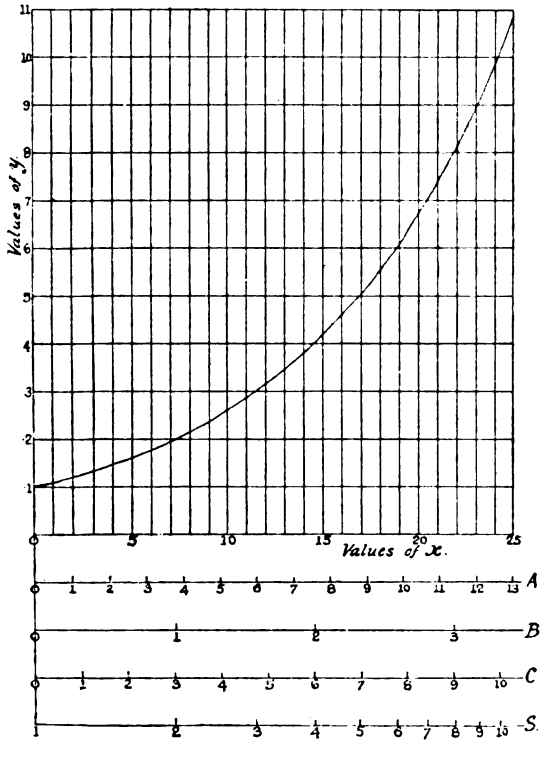
The next step is to realise that if a and b have positive values greater than 1, the graphs of $[y=a^x]$ and $[y=b^x]$, *by a mere change of scale for* x, become one and the same curve. Suppose that a multiplication by a is equivalent

to α multiplications by c, and a multiplication by b is equivalent to β multiplications by c. Dr. McLeod (see THE SCHOOL WORLD, March, 1909) suggests $\sqrt[100]{10}$, which is approximately 1·00023025, as a suitable value for c, while Prof. Bryan suggests $\sqrt[100]{e}$, which is approximately 1·0001. Then $a^x = c^{\alpha x}$ and $b^x = c^{\beta x}$. It appears, then, that the values of x which correspond to two definite values of y are in a definite ratio, independent of the value assigned to a.

We may now take a new scale for x in our graph of $[y = a^x]$, the most convenient unit being the value of x which corresponds to the value 10 for y. Corresponding to any positive value assigned to y, the value of x, according to the new scale, gives the common logarithm of y, and a portion of the graph of $[y = a^x]$ gives approximately the common logarithms of all numbers from 1 to 10.

The pupil may now be introduced to a four-figure table of common logarithms, and should, in the first instance, compare the values of logarithms read off from the graph with the more accurate values given in the table. When he writes log 2 = 0·3010, he means that multiplication by 2 is equivalent to multiplication 3 times by $\sqrt[10]{10}$ and once by $\sqrt[10^4]{10}$. So also the statement log 3·845 = 0·5849 means that multiplication by 3·845 is equivalent to multiplication 5 times by $\sqrt[10]{10}$, 8 times by $\sqrt[10^2]{10}$, 4 times by $\sqrt[10^3]{10}$, and 9 times by $\sqrt[10^4]{10}$. Hence also log 384·5 = 2·5849, because multiplication by 384·5 includes a further multiplication twice by 10, and log 0·003845 = $\bar{3}$·5849, because multiplication by 0·003845 includes also division 3 times by 10.

The accompanying diagram was drawn, in the first



instance, as the graph of $[y = (1·1)^x]$, so that the values of x show the number of multiplications by 1·1. The scale A shows the number of multiplications by 1·2, B the number of multiplications by 2, C the number of multiplications by $\sqrt[10]{10}$, while S is the slide-rule scale constructed from the same curve.

W. J. DOBBS.

A Wind Recording Instrument.

THE "wind instrument" described below has been in use in Moffat Academy for some months, and is doing good service. Fig. 1 will make clear how it is made. The essential part is the stem, which is in our case a piece of brass tubing, octagonal in section and one inch in diameter. The total height of the instrument is three feet. At intervals of one inch notches are cut round the stem, and the divisions thus made, thirty-one in number, are numbered from the bottom upwards to represent the days of the month. At each graduation eight holes are drilled, one on each face. Cross-bars at the top represent the four points of the compass, the N. in this instance being coloured red. Arrows are made to fit the holes in the stem, and are coloured black to represent rainy days, slate-coloured for dull days, and white for bright days. The arrows are shaped as in Fig. 2. It would be a decided improvement if these arrows had barbs to indicate strength of wind, like the arrows drawn on meteorological maps. This could easily be done by attaching to the arrow-head strips of cardboard as required. The vane at the top is more ornamental than useful, although it could be used if desired.

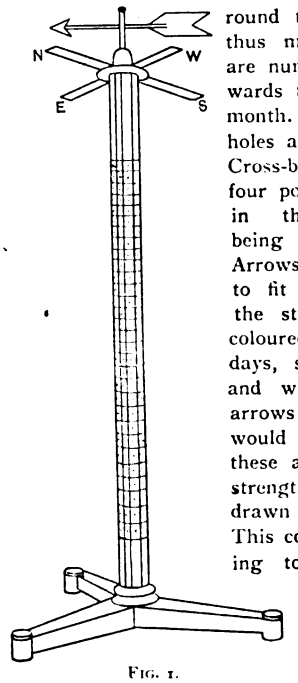


FIG. 1.

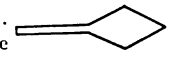


FIG. 2.

Two scholars are told off each month to record the observations. They observe the direction of the wind from a church vane visible from the academy entrance, and insert an arrow of the proper tint in that hole which most nearly gives the right direction of the wind. This is done for every day of the month. Any change of wind during the day is easily recorded. The instrument has the advantage of showing the sequence of the winds and of showing at a glance the direction of the prevailing winds. It further gives by simple inspection an idea of the relationship between winds and rainfall. At the end of each month a "wind star," as described by Mr. Frederick Mort, may be drawn to give a permanent record (Fig. 3). The November winds, drawn on a reduced scale from a scholar's book, are shown in this diagram.

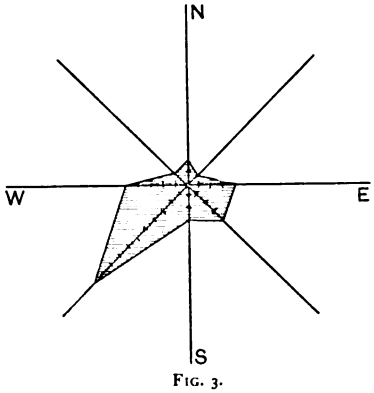


FIG. 3.

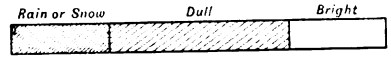


FIG. 4.

The number of rainy days, &c., may be recorded on the same page, as in Fig. 4. Plenty of graphical work of this type may be carried out.

The apparatus has added decidedly to the interest taken in the study of the weather, and has made abundantly clear which are the prevailing winds in this district and the kind of weather that may be expected with each wind. It is obvious that a row of arrows all pointing in the same S.W. direction, and all black or slate-coloured, makes a much more distinct impression than the same result embodied in a table of statistics. If differently barbed arrows are used the instrument puts in concrete form the results that would otherwise be tabulated under the headings:

(1) Date. (2) Direction of wind. (3) Strength of wind. (4) Kind of weather.

The whole apparatus might easily be made of wood instead of metal. The one in use at the academy was made to my directions by Mr. A. H. Baird, Lothian Street, Edinburgh, at a total cost of 33*s.*, and gives complete satisfaction.

GEORGE S. DICKSON.

The Academy, Moffat.

English in the London Matriculation Examination.

THE importance of the issues raised by Mr. Starke-Jones in his letter in the April issue of THE SCHOOL WORLD will, I hope, justify me in continuing the discussion. There appear to be other considerations in addition to those dealt with in the editorial note following the letter to which I have made reference.

In the view of Mr. Starke-Jones, that a boy may have gained great good from the study of books without being able to repeat the exact words of certain passages in them, he is, of course, stating a truism; but in applying it to the present case he ignores altogether the essential point that the lines given for completion were evidently chosen because they had become so familiar as almost to have passed into the ordinary speech of educated people. It is difficult to see what is meant by the remark that this question "distinctly encourages wordy talk in place of noble thought." The candidate is asked to complete nine lines and to name nine poems. What opportunity is there here for any talk at all?

In regard to Question 6, everyone is, of course, entitled to use his own judgment as to what books form the best reading for young people; but when Mr. Starke-Jones asserts that the examiners wish the candidate "to repeat, without understanding, the opinions of much older persons about things of which he cannot himself judge," it can only be supposed that he has written without careful study of the examination paper. The candidates were only asked to name certain historical novels, and to describe a scene from one of them. Does Mr. Starke-Jones mean to suggest that the description of a scene involves the repeating, without understanding, of the opinions of older persons?

As to the essay subjects, it is not easy to understand the nature of your correspondent's objection. Probably the examiners intend that the essays should form a test at once of general information and of the power of expression. Whether the subjects proposed in the last examination were of the most suitable kind must, of course, remain a matter of opinion, but at a recent meeting of the English Association, at which examinations in English were under discussion, this particular selection met with general approval.

A TEACHER OF ENGLISH.

Experimental Demonstration of the Law of Multiple Proportions.

A FAIRLY simple, but apparently not generally known, method of making red copper oxide, which gives its composition sufficiently accurately to serve as an illustration of the "multiple proportions" law when compared with the composition of black copper oxide, and at the same time shows the constituents of nitric oxide, is as follows.

Reduced copper powder is weighed in a porcelain boat and heated in a tube through which a steady stream of dry nitric oxide is passing. A red glow—which will continue for some time after the external source of heat is removed—is seen to spread throughout the copper, and the resulting compound on weighing shows results such as given below (from scholars' own experiments):

Copper used		Oxygen joined		Cu : O
0·62 gram.	...	0·07 gram., or about		100 : 11
1·30 ,,	...	0·13 ,,	,,	100 : 10
1·17 ,,	...	0·13 ,,	,,	100 : 11
1·10 ,,	...	0·13 ,,	,,	100 : 12

On converting the resulting red oxide into black copper oxide by heating in the air much more accurate results are obtained than with any commercial red oxide which I have been able to procure.

By increasing the amount of copper present and collecting the resulting gas just while the red glow is spreading, free nitrogen can be shown to be one of the products of the decomposition of nitric oxide.

E. J. SUMNER.

Burnley Grammar School.

An Exercise in Practical Geography.

I WAS much interested in the very original "Exercise in Practical Geography" contributed by Mr. Wallis to the March issue of THE SCHOOL WORLD. It has occurred to me that the area of Yorkshire could be considered to consist of two portions, one portion being drained by the Ouse, and the other *not* drained by it. The pupils might find the number of small squares in each of these portions, add the two sums, and compare this total with the total number of squares in the area of Yorkshire, which (as Mr. Wallis states) was found in the previous exercise.

It is probable that, if this were done, there would be no need to take into consideration results differing by 80 per cent. It would be interesting to know how Mr. Wallis would deal with such possible questions as: What is represented by the area ABCDEFGH? What is represented by the line which bisects this area?

W. MACLEAN CAREY.

Rutlish Secondary School, Merton.

The School World.

A Monthly Magazine of Educational Work and Progress.

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INSPECTION IN PENGUINLAND.[1]

A Recension of Certain MSS. relating to Education.

ORIGINS.—In ancient days the pedagogue was a slave who led to school the children of his master. Long years of servitude had made him patient; indeed, patience was his only inheritance and all he could hand on to posterity. In course of time an unusually patient pedagogue, who had studied while waiting for his charges at the doors of the academy, grew so learned that he was able to instruct. His lord then found that there was no need to send his little ones out to be taught by philosophers in pillared halls. As years passed, other slaves were able to follow in the footsteps of the studious pedagogue, and by exercise of infinite tact and patience to build up little academies of their own.

By reason of their tactfulness and learning they attained a hold over children superior to that of parents; and fathers groaned in secret to their wives. At last when the freed men invited to their schools other teachers of less power and less reward, thus adding to their ease and the value of their establishments, many parents became seriously sick at heart. Both high masters and ushers, they said, had grown too autocratic. So the chief men placed governors over the heads of the patient and tactful pedagogues who had encompassed parents and boys with wiles.

But even now the highest masters learnt that elasticity and autocracy could be preserved by skilful management. At length the people cried to the king, and he sent inspectors to baffle the pedagogues, who insisted on elasticity for themselves and on coercion for others.

During a period parents were left in peace, while inspectors and pedagogues managed one another.

With the appointment of these advisers the first period of education in Penguinia closes. The scholastic system of the land was out of its swaddling clothes.

[1] See "L'Ile des Pingouins," by Anatole France.

(At this point the earliest narrative breaks off, and a less romantic pen continues the story.)

ANCIENT TIMES.—The duty of these inspectors was to advise the masters and to report to the governors. The governors exhorted the masters when many faults were discovered. The system worked smoothly until certain governors and authorities of the shires began to take more interest in schools and to devise schemes themselves. Schools increased in numbers, and it was not always easy to find suitable advisers. So much so that great men induced retainers, to whom no other post had been offered, to take the office upon themselves.

The result of this was that some came to inquire into circumstances that they did not understand, and blamed the pedagogue for what he, perhaps, had been forced to do by the action of the State or by the resolution of others.

("Codex Vitellius," A. xv., which contains the MS. from which we have been quoting, is so damaged by fire that little more can be deciphered than has been given above.)

MEDIEVAL TIMES.—So far as can be gathered from contemporary writings, cases of tyranny were rare. Still, a feeling of suspicion had been roused, and this led to a long and intricate struggle.

Some masters rose actually in rebellion; others less powerful only gave in to superior force, but clamoured ever for variety. A large number welcomed inspectors, and pointed out to them all the defects in their schools, hoping by this means to obtain redress. In this they were sometimes disappointed.

In addition to the general feeling of dissatisfaction, due to no obvious cause, there was a difficulty that confronted masters when these visits of inspectors, who are always spoken of as being full dressed, took place, and that was the inspection of their own work. Either this was not tested, and the vanity of some was hurt, though their heads were saved, or they were inspected and too lightly praised.

Nervous masters contented themselves with developing theories to inspectors during the time the boys were waiting for the pedagogue to teach them before the enemy. A few unruly spirits

even boasted that they taught as the inspector liked in his presence only. This was called preserving individuality. Nevertheless a sensible reporter was able to render much service to a willing hearer. He was able to tell him how difficulties existing in the school under inspection had been faced elsewhere, how certain books had been used with advantage, how new systems had been tried with or without success.

In such cases there was satisfaction on both sides; the external critic had conferred benefits on the school. It was when an inspector told the pedagogue what he knew already, and criticised what he could not alter, that recourse was had to the hereditary tact and patience. Should a young reporter, only considering method and not results, condemn what seemed amiss because it differed from his own experience, even a Penguinian pedagogue rose in wrath. Like a volcano slumbering but not extinct, the old feeling of suspicion was ever ready to burst forth.

LIBERTÉ, ÉLASTICITÉ, VARIÉTÉ.—There was then no help for it but letters to the Journal of the day accusing advisers of autocracy, or speeches in assemblies of pedagogues. These would then discuss the question, and, finding it insolvable, shelve it, calling it "previous." Other bodies less august but more practical, visiting the home of the inspectors, would demonstrate at the door, sometimes gaining admission. They were soothed by judicious references to their high and holy calling, and generally went home in a complacent frame of mind. Now and again they vowed vengeance, and induced a knight of the shire to heckle the highest in the educational world.

Perhaps the task that called for most tact on the part of the pedagogue was when he had to appear in full dress twice within a short period of time. This attire was so stiff, so unlike his old doublet and hose, that he had reason to object to wear it. Records tell us that there was now need for management. Perhaps the two different bodies disagreed; now the master's chance had come; he smiled and sagely shook his head as he pointed out to his governors the contradictions in the two reports.

(A MS. of doubtful authority is responsible for the following. It was apparently kept in the Record Pedagogues' Office by a Board Secretary, who collected parallel extracts from reports on schools and presented them elegantly to high officials.) Among his extracts appears:

Report on A B School.

March. By the Joined Board.	*July (same year).* By the College of Education.
(1) *Hebrew.*	
Hebrew is generally promising. Some of the work is quite fair.	The progress made in Hebrew is rather discouraging.
(2) *Astronomy.*	
The work in this subject offers little ground for praise. There is some porcine ignorance.	Astronomy is well taught on true ethereal lines.
(3) *Painting.*	
The boys have a real difficulty in representing what they see.	Landscapes are faithfully reproduced and portraits excellently painted.
(4) *Instrumental Music.*	
Music shows much promise. The treatment is artistic.	The subject is evidently taught in a perfunctory and inartistic manner.

Note by Secretary.—The master explained these discrepancies thus: "(1) The best boys were up for scholarships when the collegiate inspectors visited us. The others had been taught on the oral method, and could not answer on paper the questions asked in print. (2) When the Board inspectors came there was a thick fog, and boys could not see the sky. Besides, there had just been an eclipse. (3) An unfortunate epidemic of myopia was raging during the first inspection. The majority of boys only learn painting in detention school. (4) The collegiate inspector was suffering from a bad headache, and evidently had no sympathy with a subject I take myself. Generally speaking, inspections were unmitigated rubbish, as out of twenty-six inspectors fifteen had not had two years' experience at a secondary school; fewer still had been high masters."

MODERN TIMES.—These wordy wars belong, of course, to medieval times, when anger was easily roused and the art of diplomacy little cultivated. Modern civilisation and greater experience taught many pedagogues that, after all, their supposed enemies were human and even meant well. Yet some still held aloof. One eminent teacher declared that inspectors came to him to learn as much as to teach. He would always welcome inspectors, because they were building up a system of national education, and they certainly stood in need of learning from his school what education should be. It was essential that there should be variety, and a large number of recommendations from different bodies of inspectors would differentiate scholastic systems. He thought that the peaceful conduct of schools would be best maintained by masterly acquiescence.

By degrees the ushers found that a visit from inspectors was followed by a more conveniently arranged time-table, sometimes by increased comforts, while a really enthusiastic inspector could spread abroad their fame. They saw that they themselves knew nothing of the teaching of their colleagues, immured as all were in separate rooms. An aged pedagogue admitted that, since his school days, he had never heard a master give a lesson, and that only once had a stranger waited in his class-room while he was teaching.

Inspectors, too, learnt much by experience. After a period of tentative groping for the right system they discovered that no master taught in their presence with his usual skill. Both boys and masters were at their worst in times of inspection.

From a lesson given, by request, on, for instance, algebra, it was evidently impossible to judge of an usher's general powers of teaching literature, particularly if the pedagogue was nervous. It was found quite enough to disconcert some masters if an inspector took notes during a lesson.

In harmony with the more friendly feeling shown by schools, inspectors changed their system. They took classes themselves, and by thus giving the lead instilled confidence into taught and teacher.

NEW ERA.—This innovation, first practised in the new era, inspired a Minister of Education, who really took his work seriously, with an idea that eventually removed every difficulty. It was arranged that all inspectors should change places with either high masters or ushers for a period now and again. The inspector worked under exactly the same conditions as the master he replaced. The teacher visited schools and drew up reports, for which he was usually snubbed and blamed for lack of insight by his victims. The older student-inspectors were told that they were behind the times; those that had written school books were accused of log-rolling; those that were shy and awkward in manner were called rude. In fact, the wheel came full circle; and at last teachers saw themselves as they had seen inspectors. The experience thus acquired was invaluable. The teachers learnt much, and after their round of visits to other schools returned home with doubled powers.

In his position as a master newly come into a school, the inspector had to cut out his own path. He saw the machinery in motion, and sometimes found that only half steam could be got up, because it was impossible to supply any new boilers. In short, the experiment proved to be an eye-opener, and it was agreed on all hands that the millennium had come.

The shadowy mistrust of the past vanished before the clear light of mutual understanding. The difficulties of the position of inspector and of teacher, of administrator and of governor, were realised by all concerned; and as a consequence the cause of education was served as it had never been served before. Theory and practice met together, inspectorate and pedagogy went hand in hand.

NOTE BY THE EDITOR OF THE MSS.

It appears, then, that from almost medieval times a majority of Penguinian pedagogues admitted the value of inspection, in the abstract at least. Given the right man, they found his reports helpful. The undercurrent of mistrust that a student of writings on education in Penguinia perceives seems due to the feeling that now and again inspectors were not up to their work, and that consequently their reports were beside the mark. In other cases, advisers may have been idealists who set up an imaginary standard that pedagogues, fettered by limitations not comprehended by outsiders, could not reach.

"Let the authority that sent the inspectors set the educational house in order, and put down the army of examinations that besets us, arranging for some general tests, and we will fall on our knees and worship it," said the masters.

One ancient authority, when discussing the struggle, puts the matter bluntly: "The pedagogues were jealous of the advisers. Their prestige rested on despotism undisturbed for centuries. The faults of a few inspectors were placed on the shoulders of all his fellows."

However, in spite of these assertions, the marvellous change in the relationships of advisers and advised noticeable in the new era shows that only a slight change of method was needed to bring about a cordial agreement. For the principles, to support which both sides had died in the last ditch, remained untouched; only the point of view was changed, and this entirely altered the aspect of affairs. Once more the old adage, "Put yourself in his place," had done yeoman service.

THE STATUS AND EMOLUMENTS OF ARMY SCHOOLMASTERS AND SCHOOLMISTRESSES.

By A. P. HATTON.

THE improvement in the pay of civilian schoolmasters has probably contributed as much as recent reforms in the Army Scholastic Department to make the position of army schoolmaster not nearly so desirable as it formerly was. The obvious advantages of the latter—security of tenure, the superiority of pay and prospects over the average civilian schoolmaster's, the enjoyment of appropriate power and privileges in military circles, eligibility for pension after but twenty-one years' service, and the opportunity for expanding the mind by acquaintance with peoples and places abroad—have always been minimised by the army schoolmaster's migratory existence, his liability to be moved from place to place on the minimum notice, with the consequent disruption of home and strain on financial resources, the possible detriment to the health of himself and family by long residence in tropical climes, his subjection to military law, and the inordinate length of his day's work (normally from 9 a.m. to 8 p.m.).

Recent Army Orders, no less than the increasing burden laid on the army schoolmaster's shoulders, have done much to accentuate the disadvantages of his position. To begin with, the army schoolmaster has always had a grievance in being required to serve for eight years before being classed as a warrant officer, whereas the army bandmaster is given the warrant rank immediately on appointment. Formerly, the rule was that the army schoolmaster should get "the warrant" eight years after the date of appointment on probation; but the new edition of the Army School Regulations issued in 1906 enacted that the higher rank will only be granted eight years *after date of confirmation of appointment*. This has had the effect of delaying promotion by as much as a year in some cases, though the average time on probation is nine months. The army schoolmaster's emoluments, however, are little affected by this; for his pay, from the date of confirmation of appointment (when it rises from 3*s*. 6*d*. to 5*s*. daily), is augmented automatically at the rate of 6*d*. a day every four years up to a maximum of 8*s*. a day; and the War Office, recognising that the schoolmaster's selection, train-

ing, and education give him a social and mental superiority over the lower ranks of the Army, accord him, even as a probationer, the warrant officer's accommodation, fuel and light allowance, and privilege of travelling second class, the only pecuniary difference being *2d.* less per day as lodging allowance. The anomaly is that for nearly nine years he will have to bow—whilst virtually on their level—to regimental warrant officers, such as the sergeant-major and bandmaster, and to schoolmaster warrant officers who cannot always claim professional superiority over him, since once a schoolmaster is confirmed in his appointment he has to undergo no further examinations. For the above period, therefore, the young schoolmaster feels himself to be in a false position, which meddlesome martinets may render more acute by denying him—as has sometimes happened—until he attains warrant rank, certain warrant officers' privileges, such as freedom to don plain clothes at all hours when not actually on duty.

Promotion to first-class warrant officer is usually ruled by seniority, and confers no benefits, except that five years' service in that rank brings an addition of *6d.* a day to the pension, making a total of *5s.* daily. Promotion to inspector is arrived at in the same way, subject, of course, to the schoolmaster's past records, the recommendations of commanding officers, and the necessity of being not more than forty-five years of age. It is the latter position (it may be interpolated here) that makes the schoolmaster's prospects superior to those of the bandmaster; for an inspectorship carries the honorary rank of lieutenant on promotion, captain after ten years' commissioned service, and major after a further five years, with a retiring pension (obtainable after ten years as inspector) of £200 a year; whereas the bandmaster can only in very rare cases attain a second-lieutenancy, and without hope of further promotion. On the other hand, however, a bandmaster may continue serving up to the age of sixty-five, whilst an inspector must retire at fifty-five. Practical attempts have at last been made to relieve inspectors of the growing cumulus of clerical labour—mostly mere red-tape routine—which has so greatly militated against the proper performance of their legitimate school duties.

Yet another measure of army reform has brought pecuniary loss and discontent to the army schoolmaster. Formerly he received, in common with other soldiers, what is known as service pay at *7d.* a day (included in the rates given above). But in October, 1906, proficiency pay at a maximum of *6d.* a day was substituted for all enlisting subsequent to that date or prolonging their service. A schoolmaster originally enlists for twelve years' service, and to obtain a pension he must obviously extend that service, thereby now involving a reduction of *1d.* a day in his pay—a small amount, but of consequence in view of the schoolmaster's increasing responsibilities. For within recent years map-reading has been substituted for dictation, and composition for manuscript-reading, in the examinations for first-class certificates of education, and history is to include a biography or a sketch of a campaign; the study of modern languages is to be encouraged; many fresh optional subjects have been added to the syllabus, such as military engineering, tactics, topography, military law, administration, organisation and equipment, and military history; and the following new and technical subjects have to be taught: typewriting, book-keeping, shorthand, and *précis* writing. In addition, it is now requisite for every soldier-aspirant for proficiency pay to obtain a school certificate (third class); and facilities are to be given to soldiers to attend school to qualify for Civil Service examinations. This has necessitated larger classes, more home-work, and the study, during leisure hours, of the additional subjects. The schoolmaster may also be required to instruct his boys in shooting on the miniature range, at military drill, and, at seaside stations, in swimming—subjects really quite outside his sphere.

The schoolmaster's position has become less enviable through lack of official acknowledgment of his superior worth and standing when concessions to the Army have been introduced; in this he suffers in common with the non-commissioned officer. Privileges which formerly distinguished him have been conferred on the lower ranks; and his monetary advancements during the past eleven years have been only precisely the same as those bestowed on the private soldier, instead of proportionate to the schoolmaster's influence and authority. Thus, his pay does not bear nearly so favourable a relation to the soldier's as it once did. Again, the private soldier's maximum pension represents practically 100 per cent. of his regimental pay; the schoolmaster's (second class) is only 50 per cent., namely, *3s. 6d.* a day.

It has also long been felt that five years is far too lengthy a period to serve in such stations as Gibraltar, Malta, Cyprus, and parts of South Africa, Egypt, and India, where the conditions of teaching, no less than climatic vagaries, impose a great strain on the schoolmaster's health; the same may be said of the limit of three years at such stations as Wei-hai-Wei, Hong Kong, Mauritius, and the West Indies; but the above considerations appear to have less weight with the army authorities than the extra cost that would be involved by relieving schoolmasters every two or, at the most, three years everywhere. But the army schoolmaster, lacking representation in Press and Parliament and power to petition collectively, is at the mercy of the Army Council.

On the other hand, army schoolmasters enjoy the distinct advantages over non-commissioned officers of being honorary members of sergeants' messes, and not liable to pay subscriptions, or to perform any of the duties in connection therewith; of being allowed second-class travelling

both by rail and sea, or even first if the former be not available; free to board and lodge on their own account outside barracks, and to visit town up to any hour of the day or night, except during school hours; and, in India, to exchange the hot seasons on the plains for the cool and altogether delightful climate of the picturesque hill-stations. Their advantages over civilian schoolmasters have already been enumerated, including, as they do, free quarters, fuel, light, rations, and uniform—or an ample money allowance in lieu—and medical attendance for themselves and families, not to mention participation in garrison and regimental sergeants' dances, concerts, picnics, tennis parties, and the like.

A most commendable and welcome step, too, has just been taken to improve the status and pay of the schoolmaster's assistants, who are non-commissioned officers specially selected to train for acting schoolmasters' certificates, which serve as passports to assistant-masterships in civil schools. The new order provides for the appointment, at certain selected depots, of non-comsioned officers who possess the above certificate to a new grade of acting-schoolmaster-sergeant, with pay as sergeants while so employed, and the additional pay as at present given to regimental school assistants. This should stimulate competition for these posts, and thus ensure keen and competent assistants to the schoolmaster in every station, the lack of which has been greatly felt in the past. Soldiers may, of course, be admitted to the competitive examinations for the post of army schoolmaster, but the real nurseries for the latter are at the Duke of York's School at Chelsea and the Royal Hibernian School at Dublin, where much has been done recently to make the pupil-teacher student's path easier by increasing the staff of experienced schoolmasters, so that a proportion of them can devote their whole time and energies to training the students, and by increasing the latter, so that a percentage can be relieved from the task of teaching prior to the examinations.

The army schoolmistress's position has in recent years undergone but little alteration, as she is independent of the political barometer and the changes that affect soldiers. It has always been felt, however, that her rates of pay are inadequate, especially in view of the fact that she has to take her turn of foreign service. Pay commences at *2s. 2d.* daily, and the highest rate is only *3s. 6d.*, although an additional *1s. 6d.* is granted to the schoolmistress in charge of the model school or an elder girls' school. The work, however, is not nearly so exacting, responsible, and protracted as that of the army schoolmaster. The schoolmistress's pension is, like the schoolmaster's, issuable after twenty-one years' service, and the maximum rates for first, second, and third-class schoolmistresses are *3s., 2s. 6d.*, and *2s.* a day respectively. Under an Army Order issued a few months ago, army schoolmistresses are liable to be retired compulsorily on or after their marriage, if such marriage takes place during service in the Army. Schoolmistresses retired under this order with less than twenty-one years' service (and therefore ineligible for pension) are to receive gratuities of one month's pay for each complete year of service. The schoolmistress is entitled to all the extra personal allowances of the army schoolmaster as set forth above (including second-class travelling), with the exception of uniform; she gets no rations at home stations and half the usual rations abroad. Schoolmistresses have always been forbidden to marry soldiers below the rank of sergeant, and a marriage under this rule carries with it an addition of *1s.* a day to their pay. Both army schoolmasters and schoolmistresses are entitled to full pay and allowances during all holidays. The regulations in regard to marriage which the schoolmaster feels most are that he must produce testimonials as to the character and respectability of the lady he wishes to marry, and may not marry until he is twenty-three years of age, or has completed three years of service.

The Treasury has on more than one occasion made determined attempts to abolish army schools and their staffs, and to make the Board of Education undertake the cost and labour of educating soldiers and their children. But to this the Army Council has always opposed an unflinching front—and so far with success. The following reasons may be adduced in support of the latter's action. In many cases barracks are situated at such a distance from board schools as to make it a matter of difficulty to get soldiers there at the most convenient hours; civilian schoolmasters are taxed sufficiently already; the preparation of pupils for army certificates of education necessitates a very close knowledge of military affairs and the teaching of purely technical subjects which do not at all come within the province of the civilian master; school hours for soldiers often have to be dovetailed with regimental duties; the very considerable success attending the sound and continuous system of teaching army children, as well as the high moral tone prevailing among the latter, has called forth the unstinting eulogies of civilian inspectors; and, finally, army schoolmasters will always be necessary for service abroad, and to relieve them periodically there must be a reserve of schoolmasters at home. These reasons will, it is to be hoped, permanently preserve from extinction one of the most unostentatious, hard-working, conscientious, and intellectual, though least rewarded, branches of His Majesty's Army!

WE have received two more (Nos. 3 and 4) of the cartoons published by Mr. Hanfstaengl at *7s. 6d.* each, which we reviewed in THE SCHOOL WORLD for November, 1908. These are by Walter Crane, and represent, respectively, King Arthur's Knights departing from Camelot for the Holy Grail, and the Canterbury Pilgrims. They will form highly effective adornments for the schoolroom or the library.

EXPERIMENTAL PSYCHOLOGY AND EDUCATION.

By J. A. GREEN, M.A.
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IV.

INSPIRED by the experimental psychologist, much work has also been done in the investigation of the mental processes involved in the fundamental exercises of the school—reading, writing, arithmetic, and drawing. An excellent account of the psychology of the reading process, and of the investigations which have led up to our present knowledge of the subject, has appeared recently in English.[1] It is not, therefore, necessary to refer to the subject in detail here. The general results of these researches have an intimate bearing upon methods of teaching, and probably much time and labour would be saved if the teachers of young children would make themselves acquainted with them. Of course, they will be tempted to say that, after teaching reading successfully for so many years on Miss Dale's or somebody else's method, it is not likely that a mere psychologist can tell them anything about it. In a sense there is reason in such an attitude of mind. It can only be met by a gentle reminder that children are so constituted that they will learn in spite of us. The better the teacher, the less the hindrance that will come from an unscientific method.

In the practice of medicine a poor bedside manner will ruin the effect of a sound diagnosis and a skilful prescription, whereas the tonic effect of the presence of a less skilful physician will often outweigh the deficiencies of his medical knowledge. There is something not dissimilar in the practice of teaching. The analogy between the facts is not, however, always followed up by like professional attitude towards them. Schoolmasters may often be heard saying that it is the teacher's manner in front of a class that is the all-important thing. It is personality that counts, not pedagogy. There are few doctors who would put their business in this way—even in a confidential whisper—and none who would denounce the study of medicine because of the admittedly potent influence of a good manner.

With such a book as Prof. Huey's available, it would be an uneconomical use of available space to go into the question of the relative merits of various methods of teaching to read from the point of view of the psychological diagnosis. I shall pass, therefore, at once to the subject of writing, including therein the art of accurate spelling. It must be stated first of all, however, that much less is known about the psycho-physiological processes underlying the act of writing than about the processes underlying the act of reading. Research has not gone nearly so far. Nevertheless, interesting results have been arrived at.

It is common knowledge that style of handwriting is an individual matter. We may insist upon a certain uniformity of style in the school and inflict an artificial calligraphy upon our pupils for a time. So soon as they are left alone, their individuality asserts itself. The practice of reading character from handwriting has still to receive its scientific justification, but the fact that personal peculiarities of style are not due to special manual structure seems clear, for they appear again when the same person masters the art of writing with the other hand, or with the mouth, or with the toes. Thus Preyer[1] (quoted by Meumann) concludes that handwriting is, in truth, brain-writing, a position which the psycho-physiologist would regard as self-evident. "Individual method and style in handwriting is dependent on certain peculiarities which come from the nature of the brain processes and of the mental processes parallel thereto."

Our knowledge of the psychology of handwriting comes partly from the analysis of pathological cases and partly from the experimental study of the process. These experiments have been directed to the determination of (1) hand-pressure, and of the nature of the innervations—whether, for example, each letter is produced as the result of a separate act, or whether the machinery for the whole word is set going at one and the same moment; (2) the time taken during the process, and the relative time occupied by the several letters; (3) the influence of previous intellectual preparation—what influence it has upon our handwriting whether we write from dictation, from a copy, or from something we know by heart; (4) the nature of the eye-movements during writing; (5) the influence of writing to the beat of a metronome, &c.[2]

Summarising the most important results, it is found that there are two types of handwriting, corresponding roughly, but not absolutely, to the sexes. The masculine writer exerts greater hand-pressure whilst he writes, and his words are produced as the result of whole impulses. Each word shows a maximum pressure point which may be at the beginning or at the end of the word—this is characteristic of the individual—and the rest of the word shows a pressure curve in rhythmical connection with this maximum point. On the other hand, women (and some men) exert less hand-pressure, and the more rapidly they write the less this pressure becomes. Their words are not usually produced as a result of single innervations, and several pressure maxima appear in most words.

Children learning to write show many characteristic differences from the adult type. Each letter, even each stroke, has equal pressure. The time occupied in writing a word is a question of the number of strokes it contains, and his progress is at first entirely a matter of speed; later it is a matter of grouping the separate letter impulses. It is this grouping of impulses which teaching method should keep in mind. Long-continued

[1] Huey's "Psychology and Pedagogy of Reading." (Macmillan.)

[1] "Zur Psychologie des Schreibens." (Hamburg, 1895.)
[2] Meumann's "Vorlesungen zur Einführung in die exp. Pädagogik," Bd. ii., p. 288.

practice in the production of solitary letters sets up a habit which will surely postpone efficiency, not only by reason of the separate literal impulses, but also on account of the detailed eye-movements which accompany such a style. In writing, as in reading, when efficiency is attained, the eye is relieved from minute and fatiguing movements, and the hand is freed from the detailed supervision which the eye at first gives.[1]

It appears, further, that children who have not completely mastered the art, write most quickly and regularly from a copy, but that when they have acquired the necessary skill they do their best work from dictation. This, of course, refers to handwriting only, and not to that bugbear of the English teacher—spelling, the utter irregularity of which makes the question of scientific method of teaching the subject important and, at the same time, exceedingly difficult to make any definite pronouncement upon. Dr. Lay, of the Carlsruhe Training College, produced a guide to the teaching of orthography, based upon thousands of experiments with children and students, in which he used meaningless combinations of letters for the new words which had to be acquired and tested. His aim was to determine whether visual images obtained by looking at the word, or auditory images that come from listening to the word carefully articulated, or the images of motor sensations derived from actually writing the word, or that come from silently spelling the word, or any particular combination of these were most favourable to accurate results. He found that copying out the words in combination with their quiet pronunciation proved the most effective way of learning, as tested by the proportion of errors in a dictated exercise.

His procedure has been sharply criticised by Cordsen, Meumann, and others, but his work has at least the merit of the pioneer, and probably deserves kindlier treatment than has been meted out to it by these critics. Meumann sums up the present position, after giving an account of the work of Lay and others, as follows: "The best method for the teaching of spelling will then rest upon looking at the word and copying it out, carefully articulating it at the same time." This does not differ very much from Lay's own conclusion, though, of course, that does not excuse the defects in his methods of investigation.

So far as my own experience goes, it does not seem to me that Meumann emphasises sufficiently the need for frequent copying out. The expert spells at the end of his fingers, so to speak. The total impulses with which his words are produced are only possible when the series of movements has become habitual, and, speaking popularly, the connection between the thought and the fingers immediate. This probably applies with much greater force to the English language than to a language like German, which is so much more regular in its orthography. After all, the careful articulation of words like laugh, flute, newt, night, write, &c., affords no help whatever. Visual images give the starting-points and the standard, but they do not appear to play any part in the production of the word when the art of right spelling has once been acquired. At best, they serve a critical purpose. We know when we have miswritten a word, because it does not look right. Probably, however, the image type to which the individual belongs will affect his way of learning to spell.

Passing on to the subject of arithmetic, the fundamental problem which at once meets us is that of the acquisition of the idea of number. So far as teaching is concerned, we have two opposing schools. On one hand, it is urged that the idea of number comes best from rhythmical counting, that is to say, that it depends primarily upon the sense of time rather than upon the analytical consideration of various groups of objects. Indeed, it is said that the presence of objects actually prevents the formation of the abstract idea. The sensory appeal which objects make diverts the attention of the children. They do not see what the teacher is driving at, and when a child is asked what five is, he is quite at a loss or he will say, as a child said to the writer the other day, "I'm five," when I tried to find out what his notion of the number was. He was surrounded with countable objects; indeed, he had been using them in a number lesson a moment before.

On the other hand, it is true that a child may be able to count as far as ten and know nothing of number. It is just a series of nonsense-words which uncritical parents mistake for the real thing—a mistake which is partly responsible for the very slightly developed number notions which the average five-year-old brings to school, though one might have expected that the lessons of practical life—play with his companions, &c.—would have forced a knowledge of such things upon him. The abstract nature of number is, of course, the substantial difficulty, but it is also worth noting that the age at which the sense of time begins to develop is also the period at which the child begins to acquire definite ideas of number.

Thoughtful teachers, too, are apt to think that all children arrive at number ideas in the same way, and that way is to be found in their own individual experiences. Thus Pestalozzi's arithmetical method is, no doubt, derived from what was to him the easiest way of realising number. Before the children were taught the Arabic numerals, they were familiarised with parallel groups containing one, two, three, &c., up to ten strokes,[1] the further combinations of which gave visual pictures of numbers up to a hundred. Similarly, the subdivisions of a square which represented unity formed the sensory basis of his treatment of fractions. This sort of thing with its modern developments all rests upon the adult's analysis of the situation. It is the logic of the number concept refined and reduced until there is a danger lest the object to be attained is not actually lost sight of. The machinery at any rate requires to

[1] Cp. Huey, *ibid.*, chap. ii.

[1] *V.* "How Gertrude Teaches her Children," Letter viii.

be tested, and the attitude of children towards it to be more closely examined. A similar criticism probably applies to the work of McLelland and Dewey.[1] The psychological analysis is not based upon ascertained facts in children's work, but upon an expert knowledge of the nature of number and of the logic of it.

Recent years have seen considerable activity in this field of research, and here again we are met with the variety of types in the mental life of children, making it difficult to draw any quite general conclusions. At the same time, it is confidently asserted by Walsemann, after long and painstaking experiment, that the teaching of number is best undertaken without any reference to concrete things, or at least that such references should be in the form of practical applications of the idea which has been first of all arrived at by the use of groups of dots, which make no other appeal but that of quantity to the mind of the child.[2]

In regard to drawing, most readers will be familiar with the work of Dr. Kerschensteiner, the Director of Education for the city of Munich.[3] He examined close upon a hundred thousand drawings executed in the schools which are under his supervision. His analysis of this enormous mass of material led him to regard the development of normal drawing capacity as passing through four stages, quite independently of all teaching. The first of these stages is that of mere schematic drawing, in which the child is putting down what he knows of the thing he is reproducing (*Stufe des Schemas*). He is not only telling what he knows, but often also indicating what are for him the prominent characteristics of the subject of his pencil. Is he drawing a tree—that is a thing with leaves, branches, and a stem. These appear in his sketch, but relative positions do not matter. If he draws a man in profile, he gives him two eyes and ears, and probably a row of buttons down the lateral centre of his body.

In the second stage, he pays more attention to relative position, and there is a trace of feeling for line and form (*Stufe des beginnenden Linien- und Formen-Gefühls*). The schematic element, nevertheless, is prominent for a time. In the third stage, the young draughtsman is concerned entirely with reproducing what he sees. Outlines are as correct as he can make them, but the rendering of the third dimension is either absent altogether or lamentably weak—often but an accidental suggestion. Without actual teaching, very few children ever get beyond this third stage (*Stufe der erscheinungs-massige Darstellung*). A certain limited number of eleven-year-olds contrive to express the idea of space, and about this age comes the fourth step (*Stufe der formgemässen Darstellung*), in which light and shade and other methods of indicating planes and surfaces in three dimensions are utilised.

It is hardly necessary to insist on the fact that there is nothing absolute about this analysis of the periods of development. A gifted child will pass straight from stage one to stage three or four. On the whole, Kerschensteiner found boys more gifted draughtsmen than girls, though the latter were happier in the use of colour and in purely decorative work. Many children, particularly girls, seem never to pass beyond the first stage.

It may be objected that the subjects treated in this article have gone outside the title of the series, and, so far as the case of the drawing investigation is concerned, the work is certainly more akin to that of the "live" school than to that of the psychological laboratory, nor was it done by a professional psychologist. Nevertheless, his book is a storehouse of psychological facts, and the attempt to get an insight into the development of capacity by the analytical consideration of the products of its immature efforts is sounder psychological procedure than that which begins with noting what the adult procedure is when he begins to draw. First he (the adult) looks carefully at the object, marks its proportions, &c. Hence these are the things we must *begin with* when we teach children to draw! This is the kind of error which besets all our work.

In concluding these very inadequate papers on the subject of psychology as experimentally studied in its connections with education, it is hardly necessary to say more in defence of the general position than that the movement represents a desire to get at facts, and to interpret them in their bearing on the mental development of children. No enquiry could be of greater importance to the teacher. As a method, it represents dissatisfaction with those fascinating collections of nursery stories with which Prof. Sully and others have charmed us. These offer too many sources of error, alike in their record and in their interpretation, to give them much more than illustrative value. Moreover, they cease when the child goes to school. The adequate equipment of any institution for observational and experimental work with the child of school age is still an unrealised dream in our own country, though in cities like Antwerp, Milan, Paris, St. Petersburg, Leipzig, and Budapest, public money is being applied to research in this direction.

1 "Psychology of Number." International Education Series. (E. Arnold.)
2 "Die Anschauung." By Dr. Hermann Walsemann. (Berlin, 1905.)
3 "Die Entwickelung der zeichnerischen Begabung." By Dr. Kerschensteiner. (München, 1905.)

MORE ABOUT HOLIDAYS IN CARGO BOATS.

By A. G. Linney.

In the issue of The School World for July, 1906, the present writer brought before teachers the possibility of obtaining really interesting sea voyages at a cheap rate. Since then the writer has not only visited Stockholm on the lines described in the former article, but he has also enjoyed the somewhat rare experience of a honeymoon in an ocean tramp. To those members of the scholastic profession who have not yet attempted a sea journey of the nature

indicated in the title and are in search of a change from the beaten track, a few further details and a new reminder of possibilities in this direction may not be out of place.

To judge from several letters received from schoolmasters after the appearance of the previous article, the chief difficulty seemed to be as to how to get into touch with the owners or agents of vessels in which a voyage could be made. I fancy that this question may sometimes be solved if careful inquiry is made among one's own pupils or friends. It is quite probable that there may thus be found someone who, through business or social connections, is able to furnish an introduction, if not actually to a member of a shipping firm, at any rate to a shipping or forwarding agent.

For schoolmasters who live in London, Liverpool, Hull, Newcastle, or in other large ports the task is rendered much more easy; the survey of the circle of acquaintances may very likely show a friend who is perhaps a clerk in a shipping office, and a man in such a position can probably arrange the matter. In the writer's own case, his trip to the northern Baltic came through the direct invitation of the father of a pupil; the Stockholm voyage was managed through the kind assistance of a former pupil.

The study of the shipping news in provincial papers, more especially those circulating in seaport towns and therefore likely to give detailed information of local sailings, will be very helpful: if one watches these columns week by week a pretty good notion may be formed of the ports to which there is a regular service of boats.

The shorter holidays at Christmas and at Easter do not afford much opportunity for going far afield, though I know of one man who took three weeks on a Hull trawler up to Iceland waters. This was a roughish time, and anyone thinking of trying such an experiment should be prepared for the absence of comforts or luxuries. Even if these are lacking, he will have brought back with him an enlarged purview of life, of men, and of work, which cannot but prove of value to him.

Should a man's Easter holiday extend over a period of three or four weeks, he may, with luck, be able to fix up a short trip, such as to Copenhagen, to Bordeaux, or even to Bilbao or Huelva. But it is only right to point out that unforeseen delays in regard to loading at the foreign port do frequently occur; certainly a margin of time should always be allowed, as traders do not run to a schedule time, as passenger boats usually do.

Last summer I sailed from the Tyne for Stockholm on a small Swedish steamer, and though I was fortunate to find she had a charming man as captain—one who spoke English and was the most courteous of hosts—nevertheless, it is as well to think twice before making a trip in a foreign-owned vessel.

The long midsummer break which men in other professions envy us schoolmasters is the time when the most satisfactory "tramp" trip can be arranged. My advice to intending voyagers is to get matters in hand as early as possible, and, if you can, to have several irons in the fire, seeing that delay, change of runs, or accidents may cause the most promising arrangements to break down. Don't leave the business later than the beginning of July, for by the middle of the month the owners will have a pretty accurate idea as to the sailings of their vessels. There will no doubt be an effort made by owners or agents to get their ships to sea just before the August Bank Holiday, so that the break in the work of bunkering or loading will not cause the boat to lie idle the extra day or two. When you are informed as to the probable day and hour of departure, be in port in good time, as there will be arrangements to make (*i.e.*, the process of "signing-on" at the shipping office, final purchases, finding out the names and addresses of the ship's agents in foreign ports, to whom letters may be forwarded) which cannot be seen to until the last moments.

During the summer months there is a constant stream of ships bound to the Baltic to load timber, and some delightful round trips can be had. Many vessels carry coal outwards to St. Petersburg or Cronstadt and then proceed north for the homeward-bound cargo. In the case of the trip referred to at the beginning of this article, we sailed from Cardiff just before the August Bank Holiday, bound for Stettin. The ship stopped for a few hours at Swinemünde (at the mouth of the Oder), and here we left her and went for the week-end to Stralsund—beloved of Elizabeth of the "German Garden"—and did not rejoin until all the coal was discharged at Stettin. Thence we sailed far up the Gulf of Bothnia to a romantic little anchorage among the forests of Finland. Ten days were there spent loading pit props, and during this time those of us who were honorary members of the crew were free to spend our time as we wished. The islands round were deserted by the natives, who have to earn their year's keep during the summer, and were therefore busy at the saw-mill or on the ship. In the morning our kindly skipper would detach a couple of apprentices to row us ashore, and there, among the forests, the sunlit hours quickly passed. Delicious wild-fruits abounded—raspberries, cranberries, and blueberries. The beaches were of fine white sand, with driftwood in abundance, so that we could light a fire and picnic under ideal conditions.

Returning, the vessel came through the Kiel Canal, and we were back in Cardiff on the 6th of September, the round trip having occupied just under five weeks.

As to the point of cost of these "tramp" journeys. The usual charge made is *2s. 6d.* to *3s. 6d.* per day; so that even at the latter charge the travelling is uncommonly cheap. Apart from the pleasures of such a journey, to my thinking one of the best features of it is that the passenger obtains an insight into the lives of other men

who do other work, work of a nature quite different from our own. Such an experience should widen the view, increase our sympathies with our fellows, and render us more able to appreciate the romance and beauty of the world we live in.

INTERNATIONAL CONGRESS ON MODERN LANGUAGE TEACHING.

By S. A. RICHARDS, B.A.

THE International Congress held at Paris, in the Easter holidays, under the auspices of the Société des Professeurs de Langues Vivantes de l'Enseignement Public, was the first of its kind, and the society certainly deserves the warmest congratulations on the excellent way in which its venture was organised and carried out.

The *congressistes* numbered 570, and the various nationalities of Europe were well represented. The different Governments, including the United States, had each sent its representative; from England came delegates of the Board of Education, Cambridge University, the Modern Language Association, and the English Association.

The programme contained three sections: (1) questions relating to the training of modern language teachers; (2) questions relating to the syllabus and methods of instruction; and (3) questions relating to the teaching of modern languages outside of and subsequent to the school course. Under the first heading a discussion took place as to the necessity for the modern language teacher to make a serious study of the older forms of the language which he is to teach. Dr. Breul wished to include not only the history of the language from the earliest times, but also "the outlines of comparative Indo-Germanic philology, and the elements of the science of language." This last item was pretty generally considered to be too far-reaching. Mr. Brereton was anxious for a decision as to "la dose" of this historical study to be included in the teacher's training, while the stalwarts among the reformers stood out for the sufficiency of familiarity with the language of the present day. Prof. Brunot, who most ably presided, and enlivened the proceedings with many luminous and witty speeches, remarked that it would be manifestly absurd for a man to profess to teach English if he were unable to understand Shakespeare, and it was agreed that historical studies were not to be neglected. M. Thomas, of the University of Lyon, read a thoughtful paper on the importance of the study of Old English. The indispensability of phonetics was agreed upon generally. Experimental phonetics found champions in M. Piquet, of Lille University, and M. Zünd-Burguet, the well-known phonetician and pupil of Abbé Rousselot. They pointed out the necessity for a sound knowledge of the subject, such as could not be obtained from books, and the uselessness of the mere use of phonetic script unaccompanied by such knowledge. It was felt by many, however, that they exaggerated the importance of the experimental side for the language teachers.

On the question of the professional training of the teacher, the discussion showed plainly how far we are behind in England. Dr. Breul gave an account of the work of the special committee appointed by the Modern Language Association to consider this question. Let us hope that its labours will yield good fruit. In France the *licence*, and still more the *aggrégation*, constitute thoroughly good qualifications for the teacher of modern languages; the former is required in the *collèges* and the latter usually obtained by the *professeurs* in the *lycées*. A paper read by Herr Brechtel, of Kreuznach, showed how thorough and searching, how well organised, is the pedagogic training of language teachers in Germany.

Under the second section the question as to whether it is necessary to draw up a grammar syllabus in the early stages evoked a lively discussion. Some of the advanced reformers would have none of it. The genial and enthusiastic Herr Walter, whose *Musterschule* at Frankfort is famous, waxed eloquent on the subject. "Il ne s'agit point de la grammaire," he cried; "nous n'avons qu'à enseigner la langue elle-même. Il faut parler, messieurs; parler toujours, et, après ça, parler!" However, the general tenor of the various papers sent in was that a definite syllabus is advisable for each period; that in the early stages the grammar teaching should be combined with the vocabulary, and that special lessons should be reserved for more advanced classes. The "cahier de grammaire" found considerable favour, and the exclusion of the mother tongue—now specially enjoined by the French Minister of Education—recommended as far as practical. The desire for uniformity in grammatical terminology was generally expressed. It is encouraging to know that, in France and England, committees are engaged in considering this question.

In the teaching of the verb copious practice was insisted on. It is not enough to *know* a paradigm. In the early stages the direct method by means of the verb-series found almost universal favour. Constant, intensive, varied, and methodical repetition was insisted on; also the use of complete sentences containing the verb in the tense to be learnt. Unusual forms should be omitted; *e.g.*, "thou" in English. The teaching is to be accompanied as far as possible by actions; attention is to be maintained by the variety, the *imprévu* of the means employed. Paradigms are useful for revision.

Of the third section I have no space to speak. It dealt with international correspondence, travelling scholarships, exchange of pupils, &c. Indeed, I have been able merely to indicate some of the salient points in a four days' discussion, which was of the highest interest to all concerned in the teaching of modern languages.

Nature Poetry for Children. By Asenath Smith. viii+52 pp. (Longmans.) 1s.—This is by far the best collection we have seen of original verse on nature-study for children. The poems are refreshingly free from sentimentalism, and are full of dainty fancy. We wish the little book a large success.

PHYSICAL EDUCATION IN ALL SCHOOLS.

THE important meeting of the National League for Physical Education and Improvement recently held at the Mansion House, under the presidency of the Lord Mayor, was intended to be the first step in giving effect to a series of recommendations presented by an influential committee which has been considering the subject for some time past. Representatives of the Services, the Universities, the great medical corporations, the principal public schools, educational societies, and numerous individuals all more or less directly interested in the various aspects of the subject, had concurred in an emphatic opinion that physical education should form an integral part of the recognised curriculum in every school, primary and secondary, throughout the country; and that it should be carried out systematically and upon lines more or less definitely regulated. It is probable that few, if any, of those who are practically familiar with the physical material of the childhood of to-day would quarrel with an aspiration so desirable; and even the candid doubter would be converted, were he or she cognisant of the facts revealed by a careful medical inspection of the pupils in any educational establishment.

It has been said that, in this country, we have too much of games and too little of physical (*i.e.*, developmental) exercises. It is also true that mere exercises are lacking in that quality of recreation which makes games so attractive and so beneficial. But among the children entering every school, of whatever social grade, there is to be found a certain number, much larger than it ought to be, who, while not suffering from any actual disease, are physically incapable of taking part in the ordinary games, or of being benefited by them. Chests ill-formed or ill-developed do not provide the room needed for a free action of heart and lungs; and any attempt at active exercise produces distressing and even alarming symptoms, simply because these important organs are mechanically cramped in their movements. Some months of suitable gymnastic exercise and training, properly arranged, graduated and supervised, ensures such chest development as eventually allows of the usual games being undertaken, to the untold benefit of the child thus rescued from premature valetudinarianism. That is the experience of the few schools where such a system is already in force, in relation to this particular form of physical incapacity taken merely as an example of what may be discovered and how it may be rectified.

There is no sound reason why results equally good should not be achieved generally. But the first essential is a system of efficient medical inspection and supervision. Given a due recognition of the importance of the subject, the other steps follow almost automatically. And the ultimate result should be nothing less than a national recognition of the real importance and the true place of physical fitness in relation to life, such as shall almost entirely relieve the school of its present burden of detecting and correcting the bodily shortcomings of its pupils.

Meanwhile, the one great obstacle to the general adoption of any scheme, such as that suggested in the report printed below, lies in the protest that the already over-crowded school curriculum leaves no time available for the purpose. To that, the most telling reply, perhaps, is to be found in the query which, when all is said and done, determines the choice or the rejection of every subject which is taught: "Will it, or will it not, pay?" The existence of the evil—obstacle, drawback—call it what you will—is admitted; though but grudgingly, it may be. The desirability of removing or rectifying it is admitted. Is it worth while to curtail the time at present allotted to intellectual labour with the object of securing the sounder health of the individual and a more virile race—thereby turning out men and women less informed, it may be, but more capable?

RECOMMENDATIONS.

Recommendations in regard to physical education made by a joint committee organised by the National League for Physical Education and Improvement.

(1) That physical education should be compulsory in all schools, subject to the conditions of sections (2) and (3).

(2) That medical inspection and report should be compulsory as a preliminary to pedagogical gymnastics, and at intervals thereafter; the report to make special reference to the conditions of eyes, ears, teeth, lungs and heart, and to be drawn up on an authorised form to be supplied to the medical officer. A special report should also be made on the return of a pupil after severe illness. That a local education authority does not adequately carry out its duties in regard to medical inspection unless provision is made for this.

(3) That there should be regular pedagogical gymnastics at the schools, the number of lessons, the duration of each, and the nature of the exercises to be adapted to the age and physical condition of the child, the time so allotted not to curtail the play hours, games being an important part of physical education.

The committee considers that, when possible, this instruction should be carried out daily, though it recognises that for the present this may be impossible, and that three days a week should be the minimum. It considers that, so far as possible, exercises not demanding apparatus should be carried out in the open air.

(4) That in all secondary and intermediate schools specially trained gymnastic specialists should be appointed; in elementary schools, where the physical education is necessarily carried out by ordinary school teachers, such teachers should possess a qualification in physical training.

(5) The studies of gymnastic specialists should be carried out on the general lines of the Swedish system, with such modifications as are necessitated by the different conditions of school life in this country; recognition to be made of various grades of qualifications, and corresponding differences in the course of study required.

(6) The studies of the gymnastic specialist should embrace anatomy, physiology, hygiene, mechanics, and pedagogics.

(7) For the present, certificates of efficiency as teachers will have to be granted or approved by a central body,

whether or not in the future these powers can be delegated to universities or other local bodies.

(8) The committee has considered the question of a central institute, and is of opinion that, although such an institute is highly desirable, it is not in a position at present to give definite recommendations in regard to its formation.

BOYS' NAVAL CAMP.

By T. C. MARTIN,
Lower School of John Lyon, Harrow.

A NAVAL Camp for boys which was held for the second time last August will be held again during next August and September. The camp originated in a seaside camp held at Hayling Island for London boys, but it is now held at Marchwood on Southampton Water, under the command of Lieutenant Hanson, R.N.V.R., and is intended solely for boys from secondary schools.

The boys are quartered in bell-tents set up in a large field about a quarter of a mile from the seashore. Large marquees serve as "mess deck," "reading-rooms," &c., and there are the usual store, hospital, and telegraph tents.

The camp owns a small fleet of boats comprising about ten gigs, service boats, sailing cutter, steam cutter, house-boat, and swimming rafts. To these will be added this year, in all probability, a larger sailing vessel for three- or four-day trips out at sea. These boats are moored off Cracknore Hard, and during camp communication is held between the Hard and camp by telephone and telegraph.

For the purpose of mess arrangements the boys are divided into watches and parts of the ship in true "man-of-war" style; this gives also that touch of reality which is good for the boys to feel. In the ordinary course of events the routine of the camp runs as follows:

6.30 a.m.	Rouse.
7-7.30	Physical drill.
8	Hoist colours. Breakfast.
9.30-11.30 ...	Instructions in various branches of seamanship.
11.30-12.30 p.m.	Bathing.
12.30	Lunch.
12.30-6.30 ...	Excursions, sports, &c.
6.30	Dinner.
7-8.30	Concerts, lantern lectures, &c.
9	Last post.

The officer in command is helped in the management of the camp by a staff of about twenty gentlemen, who give their services voluntarily, and who come from the universities and from various grammar schools in the country. For the management of the boats, drilling, and instruction, there are three or four chief petty officers, obtained by permission from H.M.S. *Buzzard*.

The various instructions are given to prevent slackness and to make the camp-life more interesting, the main idea being, of course, to keep the boys doing something thoroughly all day. For instruction purposes the ship's company is divided into two divisions, swimmers and non-swimmers. All non-swimmers are instructed every morning until they become proficient. At the end of the month's camp last year there were very few who could not swim. Swimmers are allowed to take up any one of the following subjects:

Seamanship.—In this department boys are taught the elementary rules of navigation, steering and sounding, and knotting and splicing.

Signalling, consisting of the international code with British signal manual, naval semaphore and names of naval flags, Morse alphabet and the use of small flags, also the telegraph.

Shooting.—Each boy is allowed seven rounds a day on the miniature range, and the use of the neighbouring Romsey full range may be acquired for proficient shots.

Rowing and sailing are also taught by the C.P.O. instructors. During the afternoons all boats, sailing and otherwise, are available for excursions to Southampton and Netley; and for longer trips there are the sailing and steam cutters. The large field in which the camp is pitched gives ample room for games of all kinds, and last year for cricket and football matches another field was hired. The Marchwood C.C. kindly lent their ground on several occasions also.

About 150 boys attended last year's camp, and prizes given by friends of the camp were awarded to those who had attained a certain proficiency in the various instructions. From the knowledge displayed it was clear that the boys had been interested, and had learned a number of useful things during their stay.

Many whole-day excursions were arranged, the instructions being omitted for the day; and as the camp was situated on the border of the New Forest, interesting rambles were made in that direction. The popular land excursions were the two-day walks arranged by Mr. Carter, who is associated with Mr. Hanson in the management of the camp. These walks were thoroughly enjoyed by the boys, inasmuch as they started out early in the morning, carrying provisions and blankets, walked about twenty miles into the forest, spent the night in some convenient barn provided with clean straw, and then returned back to camp the next day by another route. A two-day trip was made in the sailing and steam cutters, and proved a delightful experience to many of the boys, especially as the sea on those days was not so calm as it had been previously. Through the kindness of the captain of H.M.S. *Hecla*, many of the boys were allowed to go aboard the torpedo-boats moored in the Water, and on several occasions they were taken on them to Portsmouth Harbour and back. Other excursions were made to the Isle of Wight, and while there to Carisbrooke and Cowes. Opportunities were given to the boys to go over the dockyards at Portsmouth and Southampton and to visit some of the ships moored there.

The idea of the camp is to give boys a really good open-air holiday, to give them an oppor-

tunity of finding whether they have any real bent for a sea-life, and also in an indirect way to bring into public notice the Royal Naval Volunteer Reserves. The camp will be held this year from Saturday, August 14th, to Monday, September 6th, and the prospectus for it will be issued shortly by Mr. O. H. Hanson, 9, Craven Terrace, Lancaster Gate, London, W.

PERSONAL PARAGRAPHS.

THE life of Dr. Anthony Jannaris, who died in April at the age of fifty-seven, was a strange mixture of literary study and political agitation. Personally, I was directly acquainted with his work only on the former side. I have on my shelves his "Historical Greek Grammar," published with Messrs. Macmillan in 1897. This is a thorough-going piece of work, dealing chiefly with the evolution of the Attic dialect, as both written and spoken, from classical antiquity to the present time. Its index of notable Greek words alone occupies some 120 three-column pages. This valuable book is a good specimen of his work as lecturer on post-classical and modern Greek at St. Andrews, a post to which he was appointed in 1896 and held until 1904. He was evidently a man of surprising activity. He was born in Crete, and studied at the Universities of Athens and Marburg. He returned from Germany to play a prominent part in Cretan politics, serving, however, as clerk to the British Consulate from 1884 to 1888. For the best part of a year he was lecturer at Athens University on Greek literature. The abortive insurrection of 1889–90 soon called him back again to Crete, but, the movement having failed, he came to London and devoted himself to study and agitation in favour of the Cretan cause. Then came his work at St. Andrews: but even into this period he managed to interpolate a visit to Crete during the troubles of 1897, when he was made a member of the Revolutionary National Assembly. On his return to Crete in 1904 he came into conflict with Prince George of Greece, was tried for libel, and sentenced to two years' imprisonment, but was released after a few months. He was appointed in 1907 Inspector-General of Public Education in the island.

* * *

GREEK at St. Andrews suggests comment on another name, that of Dr. John Burnet, who succeeded Prof. Lewis Campbell in 1892 in the St. Andrews chair of Greek. He has now been offered and has accepted the professorship of Greek at Harvard University. After an Edinburgh University course, he went to Balliol as a scholar, where he took two first classes and a Taylorian scholarship. A mastership at Harrow was succeeded by a fellowship at Merton. Oxford has retained his allegiance through an examinership in Literae Humaniores. He has written on early Greek philosophy and is now engaged on a five-volume edition of Plato. America knows how to take of our British best in the world of scholarship.

* * *

THE new master of Selwyn College is the Rev. Dr. J. O. F. Murray, Warden of St. Augustine's College, Canterbury. He was educated at Harrow, and Trinity, Cambridge. He took the classical and the theological tripos, and university prizes for Greek Testament and Hebrew. At Emmanuel College he held a fellowship, and the offices of dean and tutor.

* * *

NAVIGATION is little taught in English secondary schools. The Navigation Department in Christ's Hospital, founded by Charles II., has dwindled considerably in recent years, though for a long period it turned out very useful navigators. The Royal Naval School, Eltham, still teaches navigation, we believe. But at Hull, the Trinity House has a special Navigation School. Its headmaster, Mr. Zebedee Scaping, has recently died in his seventy-sixth year. Many officers and men of the Navy and mercantile marine passed through his hands. The *Times* says that the names of more than 150 captains and 700 mates and second-mates were on the books of the school during Mr. Scaping's headmastership. There is a certain satisfaction in having one's educational output clearly defined, but there are few teachers who can make so clear or so large a numerical claim as this.

* * *

IN April died Mr. T. B. Lamburn, one of the assistant-masters at St. Olave's, Southwark. I remember him as a keen worker in connection with the Assistant-masters' Association. He was much respected by his pupils, and a certain old-time courtesy was part of his charm. He was to undertake next August the duties of a representative of the Modern Language Holiday Courses of the Teachers' Guild, at Neuwied on the Rhine. He had had a variety of educational experience, including a year at Heidelberg University.

* * *

ANOTHER keen member of the Assistant-masters' Executive Committee was the Rev. Stuart Blofeld, who since 1903 has been vice-principal of St. John's College, Battersea. We are glad to hear that he has been elected principal of Saltley Training College. He, too, is a man of many-sided experience and conspicuous charm of manner.

* * *

THE headmastership of the King's School, Peterborough, has fallen to a science teacher, Mr. W. E. Cross, B.A. Cantab., who was educated and has held the senior science mastership at Felsted School. He will be leaving Whitgift, Croydon, at the end of the summer term to take up his new duties.

* * *

THE ideas contained in a paper by Mr. C. Bird, of Leicester, on "The Teaching of Handicrafts in Schools" (see p. 225), are slowly but surely spreading. He made an appeal for educating the child

through his all-absorbing interests and activities. As Dr. David Somerville says in a pamphlet ("Education in Hygiene for Teachers") which I had recently brought to my notice, "Education consists in the gradual adjustment of the individual to his environment." The emphasis seems to me to be on the word "gradual." Mr. Bird rightly directed attention to the "tremendous difference to a child between the work and freedom of its home life and the work and restrictions, often needless and even ridiculous, of the school."

* * *

THE REV. A. S. DOWNES, with a boy's experience of Winchester, an undergraduate's of University College, Oxford, and a master's of Wellington College, has been elected at a comparatively early age to the headmastership of St. John's, Leatherhead.

* * *

WHEN, after long experience at Marlborough, the Rev. C. H. T. Wood was elected to the headmastership of Sherborne School, one heard all round that the election was a good one. General sympathy was felt with him in his recent retirement from the post owing to the serious illness which ended in his death at the age of forty. He was educated at Clifton and Christ Church, and served at Marlborough under Canon Bell and Mr. Fletcher. Mr. C. H. Eyre, one of the masters at Harrow, had undertaken Mr. Wood's duties at Sherborne during his illness.

ONLOOKER.

METHODS OF MORAL EDUCATION.[1]

MR. SPILLER'S book differs in purpose and in method from the two volumes bearing a similar title which were published last year under the editorship of Prof. Sadler. The present work aims at a comprehensive statement of the measures which are being taken by the great nations of the world to ensure for their children a moral upbringing, so far as those measures are presented in official syllabuses and ecclesiastical formularies. There is no attempt at personal statement by those whose life-work it is to translate syllabuses and formularies into stimulus and conduct; unless, indeed, some forty pages of very miscellaneous quotations bearing on the subject-matter of the two introductory essays can be so regarded.

The book bears the fullest testimony to the ungrudging labour bestowed upon it by its author, to his multifarious reading, more particularly in French and German, on some aspects of his chief topic, and to his earnest desire of avoiding misrepresentation of those who differ from himself. Yet it fails to attain the promise of its title-page, and is in other respects unsatisfactory. With few exceptions, the schools considered are elementary schools; be the reason what it will, the omission of boarding schools from an *English* book on such a subject is a capital defect. Something is said under each of the eighteen countries dealt with in the report; but in some cases it is disappointingly little. France, Belgium, and Italy bulk largely in these pages. Spain is dismissed in a brief quotation from a Spanish writer in the "Papers" of last year's International Congress; China and Turkey only secure excerpts from magazine articles; while Indian education is represented by a *memorial* of "certain inhabitants of Bengal," the Government's reply thereto, and an order issued last September by the Government of a Native State. An entirely satisfactory bibliography of "moral education" is hard to attain, if, indeed, it is attainable, seeing that the ramifications of the subject are so many and so extensive. In any case, that given in this book is very far from being satisfactory; it makes conspicuous omissions and unexpected admissions, and it is distinctly unscholarly. About one-fifth of the entries are set down under the head of "United States of America," where one finds the names of Herbart, Rosencranz, a former headmaster of the City of London School, and Prof. John Adams.

The first of the two introductory essays contains those cogent arguments for the "secularisation" of the curriculum which have driven all forms of religious instruction out of the public schools of France and the United States. Notwithstanding the logical force of the pleas, many Americans to-day appear to regret the fact, and, as the pages of the *Revue Pédagogique* go to show, signs of uneasiness on the same account are not wanting amongst Frenchmen who know their schools on the inside.

Mr. Spiller's desire to be fair to the "denominationalists" is evident enough, but he is out of sympathy with their point of view and appears to be incapable of grasping their meaning. For children, at least, religion is not so much a philosophy to be learned as a life to be lived; yet the author of this book seems to believe that moral training is, in the main, an affair of "lessons" and "courses." He therefore represents the Churches as contending that "morality could only be taught in the time devoted to specific religious instruction" (p. 1); and holds that such criteria as the following have a value for the purposes of his report: "Summing up the various theological catechisms and manuals—and fair specimens of these have been collected from most civilised countries for the purposes of this report—it would be well within the mark if, from the point of view of time devoted, the average ratio of explicit morals to the other parts of theological instruction were regarded as one to ten" (p. 12); "Of the seventy-eight pages of the Catechism [of Malines], about one-tenth deals more or less distinctly with universal ethics" (p. 143); "The *Petit Manuel des Catéchismes* . . . contains probably not much more than one-fiftieth part of universal ethics" (p. 231). This method becomes absurd when we find the inquirer including in his survey the Thirty-Nine Articles. On the other hand, very little indeed is said by Mr. Spiller on the practice

[1] "Moral Education in Eighteen Countries: Report on Moral Instruction (General and Denominational) and on Moral Training." With Two Introductory Essays and an Annotated Bibliography of about 750 volumes. By Gustav Spiller. (Watts.) 4*s.* 6*d.* net (3*s.* 6*d.* net in paper cover).

of discipline, which makes many ecclesiastical organisations such powerful agents in the moral education of their members.

His use of the statistical method and a mistaken interpretation of the function of "courses of instruction" constitute the prime fallacies of the introductory essays and of a report which, its author is careful to inform us, "does not concern itself with . . . 'faith'" (p. 305). These things are greatly to be regretted in an author who wisely declares that "all methods of teaching which do not communicate enthusiasm fail deplorably" (p. 39), and appears to be aware of the difficulty of furnishing "a quantitative estimate" in so elusive a matter as moral training. The symmetry and comprehensiveness of the curriculum are endangered by the stress here placed upon the ethical factor in teaching; the author advocates procedure which is likely to obscure the logical frame of knowledge in a cloud of moral generalities. It is commonly conceded to-day that it is inadvisable to "point a moral" on all occasions, and the history of education is by no means without warning as to the evil effects of dwelling upon conduct and its spiritual motives at inordinate length. Mr. Spiller proposes to repeat in another sphere the mistake of the Pietists; he calls it the ethical interpretation of the curriculum, they regarded it as the only way to initiate children into "the principles of true religion."

But history is scarcely the strong point of an author who holds that "a hundred years ago the number of moral problems which a man had to face was very small" (p. 40), or that "Christian ethics has no single central idea" (p. 21). Yet some tincture of historical learning may fairly be required in one who undertakes to present the moral aspect of education as seen by Catholic, Protestant, and Hebrew. To see Mr. Spiller at his best in this book we must turn to the last thirty or forty pages of the second essay, where he speaks of the need for direct moral instruction, and the general method in accordance with which it is best conducted. His warnings against being over-analytic, logical, and abstract are very much to the point, and the whole treatment in this part of the essay is distinctly sound, sensible, and practical. One feels, in reading it, that here is Mr. Spiller's more particular field, and that he might have given us a very much more valuable report had he made these pages the ground-work of his studies in moral curricula, and left the "denominationalists" to conduct their own case.

A Third Year's Course in Practical Physics. By J. Sinclair. 125 pp. (Bell.) 1*s.* 6*d.*—This is the third of a series of elementary handbooks on practical physics. It contains clear and well-illustrated descriptions of fifty-three simple experiments on optics, all of which can be carried out either graphically or by means of the simplest apparatus. Many of the experiments require only pins, paper, and mirrors or lenses. Each experiment is followed by a number of problems or practical exercises which involve the principle explained by the experiment. The course is quite suitable for senior students in secondary schools, or for junior students in technical schools.

RADIUM AND RADIOACTIVITY.[1]

WHEN we consider how recent is the discovery of the property known as radioactivity, the progress of our knowledge of the subject is nothing less than marvellous. Experimental discoveries with hypotheses explaining them and phophesying further results together form a completely new science of great interest and probably of vital importance to mankind in the future.

The delicate and searching nature of the work performed in the investigation of radioactivity is well illustrated by the fact that it is possible to detect the presence of one three-thousand-millionth of a grain of radium. The novel character of the science of radioactivity is indicated in the statement, "Nothing goes by itself in nature, except apparently radium and the radioactive substances." The discovery of facts which cannot be explained by the principle of the conservation of energy, as we have always understood it, is held to constitute the beginnings of a new science. The energy spontaneously given out by radium is about six calories per grain every hour, and there is no indication that any decrease in this quantity occurs as time goes by. In fact, an increase takes place during the first few years after the preparation of radium. Extremes of heat, cold, pressure, chemical reagents, or electric discharges in no wise alter the rate of escape of energy. The energy leaves the radium in the forms known as α, β, and γ rays, which escape not only from the surface but also from the interior of the radium. These three kinds or types of rays differ in their penetrating powers, which are roughly in the proportions of 1,100 and 10,000. The energy possessed by these rays is, however, not in these proportions at all. The energy radiated is possessed by the α rays almost entirely. The β rays, most effective photographically, were those first discovered by Becquerel. The α and β rays consist of extremely minute particles travelling with very great velocity. Mr. Soddy directs attention to the resemblance between these particles or corpuscles and those imagined by Newton in his corpuscular theory of light. These α and β particles represent the disintegration products from one out of every two thousand atoms of radium. Remembering the enormous number of atoms in the smallest particle of radium, it is obvious that this proportion will account for a radiation completely filling the surrounding space. The discrete nature of the radiation is confirmed by the absence of the properties of regular reflection, refraction, or polarisation.

The counting of the α particles is possible by means of the electric effect of even a single particle upon the needle of an electrometer. These particles are also counted by observing the sparks produced when they fall upon a layer of zinc sulphide in a spinthariscope. One milligram of radium throws out 136 million particles per second!

[1] "The Interpretation of Radium." By Frederick Soddy. xviii+256 pp (Murray.) 6*s.* net.

The β rays consist of negatively charged particles and are very similar in nature to the "radiant matter," or "cathode rays"—a fact proved by their behaviour in strong magnetic fields. In fact, a β particle is an atom of negative electricity, and may move with a velocity of 170,000 miles per second.

An α particle moves with a velocity of about 10,000 miles per second, and "passes through all the atoms it meets." It goes "clean through the atoms of matter it penetrates as though they were not there." When its velocity has become reduced to 5,000 miles per second, the particle can be no longer traced. "Fluorescent, photographical, and electrical actions all cease simultaneously." The existence of these limits of speed, between which alone the α particles are observable, may account for the apparent stability of non-radioactive elements.

When radium bromide is dissolved in water it temporarily loses its radioactive power, but spontaneously and gradually recovers it during the space of one month. During solution a gas called the emanation escapes, and this gas is very powerfully radioactive. It has been successfully condensed by using liquid air. It occurs in exceedingly minute quantities, but its radioactive properties allow it to be easily detected. It is chemically inert, and has been classed with the argon family, a decision confirmed by the nature of its spectrum observed recently. A most astonishing fact is the large amount of energy per grain which comes from this gas; sufficient escapes from one hundred-thousandth of a grain to produce effects visible to a lecture audience. "The emanation of radium gives three times as much energy as the radium from which it is derived."

The chief interest of Mr. Soddy's book, as shown in the title, lies in the interpretation of these results of radioactivity. The energy thrown out may come from either of two sources: a boundless external supply, or the intrinsic energy of the atom. The evidence is all in favour of the latter, and the reasoning is, briefly, as follows. Since radium in pitchblende while still in the mine indicates its property of radioactivity, then, on the first hypothesis, this energy must be able to penetrate "without loss hundreds of feet of solid rock."

If the energy is stored up in the radium itself, we should expect that after a time the radioactivity would become weaker, and, further, since this energy is in the atom, then as the activity disappeared there should be a change in the nature of the atom itself. Now both these results have been obtained. A life-period has been determined for the radioactive atom, and the changes in the atom have been observed in the production of new substances. The results so far are exhibited in the series: Uranium, Uranium X, Parent of Radium, Radium, Emanation, Radium A, B, C, D, E_1, E_2, F (Polonium), G (Lead?). The atomic weights of these substances have been determined, and are found to range from 238 for uranium to 206 for lead. At each change one α particle escapes from the atom, and the α particles are now regarded as helium atoms. It is important to remember that it is only the small disintegrating portion of the radium which is thus changing, and that the various substances in the series are only produced in the most minute quantities.

The lesson of radium is that it is exceptional as an element because it is changing so rapidly, whereas the elements before known are either changing not at all or so slowly that the change has been unperceived. . . . It appears that this internal store of energy we learned of for the first time in connection with radium is possessed to greater or lesser degree by all elements in common, and is part and parcel of their internal structure.

The aim of the alchemists, the transmutation of elements, is thus proved to be a possibility: it has been seen to occur in the case of uranium.

Looking backwards at the great things science had already accomplished, and at the steady growth in power and fruitfulness of scientific method, it could scarcely be doubted that one day we should come to break down and build up elements in the laboratory as we now break down and build up compounds, and the pulses of the world would then throb with a new force, of a strength as immeasurably removed from any we at present control as they in turn are from the natural resources of the human savage.

Mr. Soddy concludes a most interesting book with the idea that the antiquity of the association of the Philosopher's Stone and the Elixir of Life, the former producing transmutation and the latter connecting the energy as controlled with physical life,

may be an echo from one of many previous epochs in the unrecorded history of the world, of an age of men who have trod before the road which we are treading to-day, in a past possibly so remote that even the atoms of its civilisation literally have had time to disintegrate.

THE REPUBLIC OF AUGUSTUS.[1]

THE reviewer seizes on a new volume of Ferrero's with the same zest as his father used to seize on a new part of "Pickwick." We wrote the word Pickwick without malice: the compliment was not meant to be taken in a Pickwickian sense; but the comparison which came into our mind seems to be apt in more respects than one. The book is absorbing, as "Pickwick" was; there is also not a little imagination about it, and the author lets us into the secret by his own footnotes. He makes no pretence; much of his narrative is due to imagination, but the imagination is not arbitrary or regardless of known facts. On the contrary, he has assimilated his facts with remarkable thoroughness; only the facts are so scanty and so puzzling that they do not tell a plain tale. Mr. Ferrero has allowed his

[1] "The Greatness and Decline of Rome." By Guglielmo Ferrero. V. The Republic of Augustus. Translated by H. J. Chaytor. 372 pp. (Heinemann.) 6s. net.

imagination to fill out the gaps and to suggest explanations of the riddles, so as to build up a continuous and consistent tale on the foundation of these facts. Here, as before, he is in conflict with the modern style of chronicler; but he takes the true historian's method, in our opinion, which the chronicler has neglected.

The title of this volume of the work shows the author's point of view. Historians have been accustomed to regard Augustus as a clever man of infinite guile, who established a hereditary dynasty under a cloud of pretences: Mr. Ferrero regards him as a man of retiring and scholarly tastes, forced against his will into a supreme position, and kept there because he was the only man who could fill it; one who honestly desired and strove to restore the republic, and failed only because the aristocracy were too degenerate to do their duty. When he took Agrippa as his colleague, he did so because he wished to restore the republican principle of the dual magistracy; when he referred difficult questions to the Senate, it was because he did not feel able to coerce the nation in the course that was obviously right, and hoped that the aristocracy might rise to the occasion. He failed because they did not rise to the occasion; and they did not rise because (like our own middle class) they had come to desire peace and plenty without being willing to pay the price in personal effort. The Augustus of this book is a more human figure than the Augustus of legend, more admirable in heart, but less in head. It is impossible not to sympathise with his bitter disappointment, when he saw his family degraded and the life-work of forty years thwarted by the softness of his countrymen.

And here is the awful lesson of the book: for the very conditions that ruined the Roman republic are visible in modern Europe. A long and exhausting struggle left the survivors anxious only for peace, and resolved that, whoever had to fight in the future, it should not be they. The middle classes, with commerce and manufactures, became predominant over the aristocracy with ideals of conquest and rule: the desire for comfort killed intellectual life, philosophy, poetry, and all that could be called useless. The riff-raff cared for nothing but free food and to be spectators at the athletic sports. War was removed to distant frontiers, and those who did not see it refused to believe in its existence. Only one seed of vice was absent, the cant of the humanitarian; but this, the bastard child of Christianity misunderstood, is rampant amongst ourselves. Ferrero does not fail to point the moral with his bitter irony. It is a book from which politicians might learn, if they were capable of learning or of distinguishing truth from falsehood. He points out (p. 347) that what we proudly call civilisation may also be called moral degradation.

The dearth of able men is very notable in the period of this book—another ominous parallel with the present day. Earlier volumes have been full of brilliant character-studies: here we have hardly any but Augustus, Agrippa, and Tiberius. For the last, we must expect a further study in the next part, but his earlier achievements come under review here. Ferrero regards him as a great man: the one great general who survived from the old aristocratic stock. It is perhaps fortunate that we are able to take an early view of Tiberius, untouched by the stories to be told of his later days. If Tiberius had died in A.D. 14, he would certainly have come down to us with a great reputation, both as soldier and as statesman. Ferrero, with his dramatic instinct, has no doubt meant to give this anticipatory view of the man, in order to combat the more readily those later stories which he believes to be mostly false. Certainly the sketch here given shows him to be a man of worth, and his actions are traced to reasonable motives. We shall look forward with lively anticipation to the volume which will fill in this sketch. We hope to learn what Ferrero thinks of Mr. Tarver.

EDUCATION IN AMERICA.[1]

MISS BURSTALL has already proved by her "English High Schools for Girls" that she is well equipped for any work demanding patient research, careful discrimination, and a well-balanced judgment. In the present volume no attempt is made to cover the whole field of American education. Miss Burstall concentrated her attention on the education of women and girls, and, while much that she says is capable of general application, the distinctive feature in the book is its full, accurate, and illuminating analysis of that side of education. In common with almost every observer, Miss Burstall comments on the extraordinary strength and magnitude of the American belief in education. Yet it should be noted that this is only a partial and superficial statement of the case, though it is given forth by all recent educational writers as if it were a universal truth.

In North Carolina the minimum number of school days required amounts only to seventy in the year, and in the Southern States generally the demands in the way of school attendance are exceedingly moderate and do not bespeak any extraordinary belief in the value of education. In one of Prof. Sadler's reports it is stated that, though the high schools are free throughout the length and breadth of America, only 3 per cent. of the elementary-school pupils go forward to a course of higher education. All these facts—and there are many others (cf. Mr. H. G. Wells's revelations of the heartless exploitation of juvenile labour even in the New England States)—go to prove that there is a great public in America which has no more regard for or belief in education than the masses in our own country.

Miss Burstall has some wise words to say on the subject of religious instruction. "No one can

[1] "Impressions of American Education in 1908." By Sara A. Burstal. xii+329 pp. (Longmans) 4s. 6d.

talk to leading Americans about the problem of religious education without feeling how great is our advantage in retaining in our ordinary State schools the religious education which has always formed a chief part of our ideal. America warns us how terrible is the loss, how great the danger to the stability and moral health of the nation, if we abandon this essential element in the life and growth of humanity and the individual." The sad thing is that, although all thoughtful Americans recognise the danger of the present secularist position, they are agreed that it is impossible to alter the system.

Miss Burstall has very pleasing recollections of the admirable discipline of all the American schools she visited. Though there are no prizes and virtually no punishments, no hard and fast rules of government, and no penalties, the school machinery seems to go on from day to day without a hitch. Miss Burstall wisely suggests that this may be due to a difference in the temperament and character of the pupils as compared with those in the old country. Psychologically as well as geographically they belong to different continents, and no good purpose is served by trying to measure them by the same standards.

One of the most interesting chapters deals with the position of women in American education. In New England more than 90 per cent. of the teachers are women; yet Miss Burstall directs attention to the fact that from this small percentage of men come the superintendents, the principals, and directing officials generally. "The subordinate position of women in educational institutions shows itself more and more clearly the more one studies." Several explanations have been suggested for this condition of things, and the one most favoured was that women did not like administrative work and had not the natural gifts required for it. Yet in England and in France women have shown themselves able administrators in different fields, and there is no reason why they should not do so in America also, if only they were given the opportunity.

The chapter on co-education is welcome in view of the increasing attention being given to the subject in this country. Miss Burstall admits that there is a distinct reaction against it in the colleges, but she found no trace of such in the high schools and elementary schools. On the whole, while admitting the good points of the system in America, she doubts the possibility of introducing with advantage co-education into English schools.

Woodwork for Schools. By James Thomas Baily and S. Pollitt. Part ii. iv+46 pp. (Murray.) 9d.—A splendid little book, in which the authors have endeavoured to depart from the usual courses of woodwork and to correlate this work with elementary science by the making of simple apparatus. Used as a text-book, the lessons outlined should prove very stimulating to the pupils of secondary schools, as they give scope for individuality. A good feature of the book is the variety of questions arranged for each lesson.

THE TEACHING OF GEOMETRY AND GRAPHIC ALGEBRA.

OPINIONS UPON THE BOARD OF EDUCATION'S CIRCULAR.

THE circular issued recently by the Board of Education upon the teaching of geometry and graphic algebra in secondary schools, and summarised in our May issue, describes an order and method of treatment which differ in several respects from those usually followed, and are opposed to some of the recommendations of the committee of the Mathematical Association. It seemed desirable, therefore, to invite opinions from experienced teachers upon the suggestions contained in the circular. Subjoined are replies received in answer to a request for a brief statement of views upon the course of work recommended.

It will be seen that there is a wide diversity of opinion as to the value and practicability of the Board's proposals. The document is not to be considered, therefore, as a final statement of what should be the contents and arrangement of work in geometry and graphic algebra in secondary schools, but only as a contribution to the principles of mathematical education. There is no doubt that, if the circular had been discussed before publication by a committee of experienced teachers with high mathematical attainments, a number of points in it would have been modified. The fundamental aims of the teaching of geometry and the capabilities of average pupils in secondary schools; the assumptions to be made; the order in which various concepts are to be presented; and the method of approach to graphic algebra, are instances of points upon which the Board expresses one view while many teachers hold another.

The circular should, in fact, be regarded as an individual opinion, and not as an authoritative pronouncement upon mathematical teaching: its scheme must be considered as suggestive and permissive, but not as conclusive. To insist that the course should be followed, or even to encourage it and depreciate others, while various points are open to objection educationally, practically, and logically, as appears from the subjoined communications with which we have been favoured, cannot be contemplated. Teachers may be left to extract from the circular the useful advice which it certainly contains, but to enforce the whole of the recommendations would be a misuse of power.

It is well known that the Board's circulars are drawn up by one or two officials in consultation with a few teachers or other authorities, so that they are statements of a case rather than carefully considered judgments from which there can be no reasonable appeal. We suggest that the Board could adopt with advantage the plan of prefacing each circular upon methods and matter of teaching with the statement that it is not committed to the opinions expressed, and, while giving general

approval to them, leaves their acceptance or otherwise open to be decided by individual knowledge and experience.

I.

By P. ABBOTT, B.A.

Head of the Mathematical Department, The Polytechnic, Regent Street, London.

ON the whole, the portion of this circular which refers to the teaching of geometry will commend itself to those who are more specially interested in the subject as a preliminary training for technical or engineering work. The happy welding of theoretical and practical work here suggested, the appeal to the student's common sense and experience, the emphasis laid on the value of intuition at certain stages, all offer a much more valuable training to the future engineer than the dry, formal, parrot-like methods which have obtained in the past and still exist to some extent. Nor, if the third stage receives proper treatment, need there be any loss of that deductive training which is of the highest value, whatever may be the subsequent career of the pupil.

Much might be said on points of detail, but only one or two call for attention just now. The circular assumes that training in geometry is to begin at the age of twelve. This is probably due to the entry of elementary-school children at that age; but surely there will be some preliminary training in all secondary schools, and possibly in elementary, before this age. It is not too much to expect that practically the whole of the first stage should have been covered before the age of twelve, and that that age should see a start made, at least, with the second stage. It would be advisable, perhaps, to keep until this age that work on practical mensuration which is now usually done, in self-defence, by the science teacher in the physics laboratory, but which ought to be done by the teacher of mathematics in a properly equipped mathematical laboratory.

With regard to that section of the circular which deals with the use of graphs, it does not make clear the methods by which they may be utilised to lead up to, and illuminate, many of the fundamental parts of algebra. The methods indicated by the circular seem to point to a somewhat haphazard fashion of dealing with graphs, and there is little evidence of an ordered plan. In the elementary stages of algebra there are two ways in which graphs can be used to very great advantage, and these receive hardly any mention in the circular. They are:

(i) To indicate the varying values of an algebraical expression.

(ii) To indicate and to lead to the discovery of the rate of variation.

At the outset, when the child is considering an expression of the first degree in a single variable, he should be allowed to plot different values of it for different values of the variable. When this has been done it is a very simple step to discover the uniform rate of increase, as shown by the slope. The graph is also utilised at once for the solution of simple equations, the nature of which the child appreciates before any algebraical treatment is introduced. After a time the introduction of a second straight line, corresponding to a second expression, leads easily and naturally to the solution of simultaneous equations. It is possible, without any difficulty, to get young children thus to solve, and really to understand the solution of, simultaneous equations long before they have attempted algebraical methods. The slope of the line is emphasised throughout, and employed at this stage as a means of drawing the line. Similar methods are employed with expressions of a higher degree than the first, and it is thus possible at any early stage to arrive at a thorough understanding of a differential coefficient, and to obtain it graphically in the cases of simple functions. Such a preliminary training in graphical work is found invaluable in future technical work, besides being illuminating from the point of view of algebra.

II.

By J. G. BRADSHAW, B.A.

Headmaster of Packwood Haugh Preparatory School.

BY way of preface it may be well to state that my experience of late years has been with boys under fourteen, so that I cannot speak with any kind of authority of the ultimate effect on older boys of the training received in the early stages. Most teachers will agree with the circular as regards the first stage. When practical geometry was introduced a few years ago, at first there was a tendency to spend too much time in attempting to achieve accuracy in drawing, and to prolong the course unnecessarily, previous to an introduction to practical geometry. So these first pages of the circular ought to prove very helpful, especially to the inexperienced teacher. But when he tries to get some guidance in the theoretical teaching he will find the circular involved and contradictory. There are some sound pieces of advice, but often they are put together so loosely, especially in the third stage, that this part might well be rewritten.

The root of the matter lies in these excellent words: "All new ground should as far as possible be gained by original work. New propositions should be presented as riders." Here we are all agreed. The writer of the circular advocates that a knowledge of the fundamental propositions on the congruence of triangles should be gained by constructing a second triangle congruent to a given one, and also by practical questions in heights and distances, &c.—a kind of intermediate course between practical and theoretical geometry which has been practised in most schools. But he has left it very vague how to pass from this intermediate course to the strictly deductive work. He apparently discards the methods of superposition, and we are in a fog about the exact point where the rigid deductive proofs are to be taken up. Surely if a boy has had a sound preliminary training he finds little difficulty in understanding the propositions about congruent triangles; then, if he has a thorough course in riders, he is in a position, with a few suggestions from his master, to attack as riders the subsequent propositions. As, indeed, the circular says in the sentences quoted above, this power of doing original work in new ground must be attained; otherwise our teaching is a failure. But though the British Association or the Mathematical Association or the Board of Education may publish circulars, yet much of the geometrical teaching in this country will remain bad unless examiners are coerced. The circular is not sufficiently uncompromising on this point. We have this sentence: "Although examining bodies may continue to pass candidates, who merely reproduce proofs they have learnt . . . the only proof of knowledge worth having is the power of applying it to new matter." This is half-hearted. Examining bodies must insist on some evidence of this power, and not pass candidates merely on rote work. If they will become inflexible on this point, geometrical teaching will improve not only in schools where it is now taught worst, but even where it is taught best. Such an uncompromising attitude will do more good than all the circulars.

Finally, as regards graphs. I am unaware how far the knowledge of graphs gained by young boys in recent years has been found serviceable in the later stages of mathematics, but I am convinced that graphical work of a reasonable kind has proved of real educational value to young boys. They readily understand graphical work of various types—*e.g.*, contour lines in geography—and are thoroughly interested. It is difficult without trial to pronounce on the success of introducing graphs as a preliminary to algebra, which is suggested in the circular. The present writer has been accustomed to plunge boys at once into problems on simple equations, and then to work backwards to explain the principles of multiplication, &c., as necessity dictated. So-called substitution has been taught by means of formulæ and by finding by trial solutions of equations of any degree. Boys find it interesting to discover, say, the number of feet a stone falls in ten seconds, or to be able to add up all the numbers from 1 to 1,000 in a minute's work.

In spite of some defects the circular is bound to provide helpful suggestions. Those of us who are keen to quicken the wits of young English boys by improving our methods are grateful for every attempt to help on the good work, even if we do not see eye to eye in every particular.

III.

By W. J. DOBBS, M.A.

Senior Lecturer in Mathematics and Mechanics at the Wandsworth Technical Institute, &c.

I CONFINE my remarks to the "teaching of geometry." There is much in the Board of Education's circular with which I find myself in complete agreement—*e.g.*, the arrangement in three stages concerned with (i) fundamental concepts, (ii) a few fundamental propositions, (iii) the general deductive development; the insistence upon a training in rigid deduction as an essential element in school geometry; the shortening of Stage I. and postponement of the great mass of practical work until it is needed to secure comprehension of geometrical propositions.

The points on which I wish to join issue are (i) the presentation of the concepts of direction and parallelism; (ii) the subject-matter of Stage II.

With regard to (i), I think that the concepts should be presented in the reverse order. The examples given of *direction* are surely most unfortunate. With reference to a point in space, what meaning can be attached to such terms as vertical, north, south, &c.? Surely the fundamental concepts of geometry should not be dependent upon locality on the earth's surface, in spite of the literal meaning of the word *geometry*. Beware lest, in "liberating boys' minds from what becomes the tyranny of paper," you impose upon them the tyranny of place. When the concept of parallelism is understood, and not until then, I venture to think the concept of direction may be introduced.

With regard to (ii), I agree that the fundamental propositions regarding angles should be considered and driven home; but, in my opinion, the subject of congruency of triangles is out of place, and relatively of small importance. I venture to suggest that the fundamental propositions on which all subsequent deduction depends should be associated with the root ideas of (*a*) the motion of rotation of one plane upon another; (*b*) the motion of translation of one plane upon another; and (*c*) folding.

Euclid I. 32 cannot be satisfactorily considered by means of (*a*) alone, but (*a*) and (*b*) are both required, and (*b*) gives the true idea of parallelism. Both kinds of motion are easily illustrated and understood. I was glad to see in the circular the following recommendation: "The idea of change or motion should be introduced wherever possible." Why not introduce it fully and systematically in Stage II.?

With regard to (*c*), it is surely a fact that any knowledge of geometry which is intuitive is associated consciously or unconsciously with ideas of symmetry. I do not mean, of course, that the word *symmetry* should necessarily be used at the outset. Let a boy think of the passage of a point P from the middle point M of AB in one plane along a path such that PA is always equal to PB. He realises at once that the movement must be directed at right angles to AB, and kept straight in that direction. Illustrate by folding A over B.

It is easy to extend the idea still further. Take OA=OB and fold over along the bisector of the angle AOB. Then A will coincide with B. Also points situated in the bisector are equally distant from OA and OB.

In this connection consider the isosceles triangle, and let the boy learn to regard it as two duplicate right-angled triangles placed back to back.

These two fundamental loci, I suggest, are far more powerful, and more suitable as fundamental propositions, than the usual group of propositions which deal with congruency of triangles, and which should occupy, I think, an altogether subordinate position in Stage III.

IV.

By H. S. HALL, M.A.

Formerly Head of the Military Side, Clifton College.

I HAVE been asked by the editors of THE SCHOOL WORLD to offer some comments on the circular of the Board of Education to which reference was made last month.

A careful perusal of this remarkable document—not once, but many times—compels the conviction that it is an *ex cathedra* pronouncement, lacking a due sense of proportion, and one which will be very generally described as unsuited to beginners by those who have a first-hand experience of their needs. As regards some of the provisions of the circular, it may be questioned whether anything more unpractical and inconsistent in the domain of elementary mathematics has ever been published.

The paper is so long that it is impossible to deal with it all in minute detail. In the present contribution it is proposed to offer a few comments only on that part of the circular which relates to the teaching of graphs.

The question of graphs as part of a course of elementary algebra may be looked at from two different aspects. The first is that of a teacher who, after years of successful experience with beginners, tries at every stage to realise the position of the young learner, anticipating his difficulties, and gently leading his tottering steps along the uphill paths of elementary algebra. The second is the retrospective purview of the professor of applied mathematics, whose one desideratum for his pupils of maturer age is that they shall possess a certain special equipment of mathematical results and processes, no matter how they have been acquired, so long as they can be turned to account in a technical course.

That the circular under consideration is in sympathy with teachers of the professorial class is sufficiently evident. It assumes an initial intelligence and mathematical insight rarely found in a class of beginners, while it ignores numberless difficulties inseparable from early lessons in algebra, especially when the pupils are young and the classes large.

We are told that graphic work "should not be treated as an end in itself," but that it should introduce "an element of reality into what is often a very abstract and unreal subject." So far there is no ground for disagreement; let us see how the circular proposes to satisfy these conditions.

It is suggested that graphs should be introduced "very early, when the transition is being made from arithmetic to algebra." This means that the course proposed is to be taken up by boys of twelve or younger, and would naturally apply to the majority of boys before they leave a preparatory school.

The first step is to be "plotting statistics confined to such as are part of the boys' real knowledge." We are not told how this work illustrates the transition from arithmetic to algebra. The mere record of a series of observations in tabulated form, accompanied by a picture, is within the powers of anyone who can read and write, but it is neither arithmetic nor algebra. At all events, "the boys' real knowledge" in this direction will not carry them very far. The next step marks what is really a very big jump. "By experience boys must realise the difference between a mere chart of a set of discontinuous and possibly unrelated values—*e.g.*, the maximum temperatures on successive days—and a continuous graph admitting the use of interpolation." If the graphs are to be limited to "the boys' real knowledge," it is difficult to see where the experience here demanded is to come from.

After calculating and plotting some average speeds of trains, the pupil is to "arrive at the utility of the expression, $\frac{120}{x}$, together with a graphic exhibition of all its values, including, incidentally in a simple and effective fashion, the new concept of infinity and the new mathematical concept of zero." Without questioning the "utility" of the *rectangular hyperbola*, it may perhaps be permitted to doubt the wisdom of selecting this as the first algebraic curve to which the pupil is to be introduced. We must not lose sight of the fact that he is still only supposed to be crossing the threshold of elementary algebra. To prevent any mistake on this point, the circular puts in a frequent reminder by using such phrases as "from the outset," "from the very beginning," and so on; but there is nothing to indicate in what way graphics, when once started, are to be fitted in with the essentials of "ordinary algebra." The absence of any advice on this point is a very glaring defect in the circular, and reveals its unpractical character. It will occur to most teachers of experience that even if ordinary algebra is brought down to an irreducible minimum, it involves many things which cannot be taught without much varied illustration and patient drill. A boy does not learn by intuition the new ideas connected with coefficients, indices, negative quantities, rules of signs, brackets, degree, dimensions, equations and their application to problems, to say nothing of factors, fractions, and identities. These must be taught systematically with some definite plan and sequence, and cannot be picked up and assimilated from a graphical course, however well designed. By all means let graphs be intelligently used in their right place—to illuminate ordinary algebraical processes—always remembering that graphic work is "not to be treated as an end in itself," and that it cannot be made a substitute for ordinary algebra.

The circular proceeds to advise "further cases from the arithmetic books, especially those under the heading proportion." All this is now done as part of ordinary arithmetic according to the most recent text-books. Incidentally, I may point to the inconsistency of this last suggestion. Proportion sums would naturally deal very largely with linear graphs, the early introduction of which the circular most strongly deprecates, as will be seen later. Moreover, few teachers will disagree with me in thinking that inverse variation presents very real difficulties to young learners. To take linear graphs illustrating direct proportion merely as "further cases" after inverse proportion has been exemplified by the rectangular hyperbola seems to be a violent and unnatural subversion of all practical experience.

"Once an algebraical expression such as $\frac{120}{x}$ has been formulated, the master may take further such expressions almost at random and let boys graph them." The types suggested include parabolas, cubic curves, and others which, if properly traced, must show discontinuous branches and asymptotes.

The type $(x-2)(x-4)$ "introduces at once various points—the real meaning of brackets, the law of signs in multiplication," and so on. (Is it seriously proposed to *introduce* brackets and the law of signs through the medium of graphs of special types?) "This work is really valuable in itself, and may largely take the place of wearisome and meaningless evaluations." Now it is readily conceded that evaluations may be overdone, but within reasonable limits they are part of the necessary drill to enforce the meanings of coefficients, powers, brackets, rule of signs, and the use of negative quantities. If among the curves selected at random boys are from the outset to tackle functions such as $3x^2-7x+5$, there will be endless numerical blunders in dealing with negative quantities. I pity the master who has to correct the results of an hour's work from an average class of twenty boys if there has been no previous drill in substitutions. The confusion in young minds has to be watched very carefully and guarded against at every point, taking the difficulties and disposing of them one at a time. In the early stages I have known cases where it was necessary to point out that $3x+4y$ is not equal to $7xy$, and to illustrate the same by saying that 3 horses combined with 4 boxes can never produce 7 horse-boxes. But as for any sanguine belief that accurate notions about new concepts can be picked up and grasped incidentally through the medium of graphs, *credat Judaeus.*

We now come to the most startling paragraph in the circular.

"When boys are able to work fairly correctly, a few linear forms (*e.g.*, $2x+5$) may with advantage be given. It is better not to begin with these as is usually done, as it is important from the outset to regard all functions alike as within boys' powers; also because the fact that the first-degree function is expressed by a straight line is much more impressive if it appears against a background of wider experience than if it is the only fact known."

It would be almost as practical to offer the following paraphrase as suitable to boys learning Greek:

"When boys can read Thucydides fluently, a few sentences illustrating μέν and δέ may with advantage be given. It is better not to begin with grammatical details as is usually done, as it is important from the outset to regard all Greek literature as within boys' powers; also because the fact that μέν and δέ are antithetical particles is much more impressive if it appears against a background of wider experience."

With regard to linear graphs, there is one point which cannot be ignored. An elementary course of algebra should certainly include simultaneous equations of the first

degree at a fairly early stage, and when this point is reached graphical illustration is of the utmost value. No master nowadays would think of missing the opportunity which graphs afford of explaining the terms "simultaneous" and "indeterminate" as applied to equations. The determination of a line by a single equation, and of a point by two, the conditions for consistency or independence in a system of equations, can all be so vividly and forcibly presented by graphic treatment that it seems absurd to postpone these considerations for want of a larger background of experience.

One of the most acceptable suggestions in the syllabus sketched out by the Mathematical Association was the early introduction of easy equations and problems. On this point probably all teachers are unanimous, but perhaps all are not equally aware how little boys of ten or eleven can take an intelligent interest in simple problems long before they can attempt anything in the way of a graph. It is easy to make little problems leading to equations such as

$$2x+3x+5x-4x=66,$$

and a common-sense solution can be understood by any child who has learnt how to collect coefficients of like terms. A little later, when he gets a more formal introduction to simple equations, he has acquired a good many preliminary notions which make his subsequent path easier. But when we examine the course of study proposed by the Board of Education, we find that the word "equation" is not once mentioned until, at the foot of p. 2, we arrive at the statement, "when boys have drawn a curve decently—*e.g.*, $(x-2)(x-4)$—they should be made to proceed to the solution of an equation—*e.g.*, $(x-2)(x-4)=5$. This introduces further points, in addition to the all-important idea of an equation itself." In other words, a boy's first acquaintance with equations is to be through the medium of a quadratic with irrational roots! Equations deserve and demand better treatment than this. One is tempted to ask why (for the sake of consistency) the pupil should not first attack a still more general type of equation, so that the simple equation, like the linear graph, may appear more impressive against a background of wider experience.

The foregoing remarks cover rather more than half the suggestions contained in that part of the circular relating to graphs. It would be wearisome to go through the remaining details categorically; it will be sufficient to add a few concluding comments of a more general character.

The difficulty of fitting the proposed graphical course into the ordinary algebraical curriculum has already been referred to. The framers of the circular begin by strongly deprecating the idea of graphs being "regarded as an additional burden for which time can only be found by the sacrifice of something else," and yet they summarise the whole course in the following sentence: "All this work can with advantage be done at the outset, quite apart from any instruction in ordinary algebra; but it is obvious that boys will have already got hold of the most important things in algebra—the coherence of results and, therefore, the reasonableness of the fundamental laws and the meaning of equations."

This paragraph bristles with debatable points: the words "with advantage," "at the outset," "it is obvious," "already," invite the severest criticism, but space forbids. I must be content with pointing to the general inconsistency of the whole.

If the course of graphics is quite apart from ordinary algebra, it is difficult to understand how it escapes the charge of being either "an additional burden" or "an end in itself." If it is suggested that the graphical course is to precede the ordinary algebra, then it is not only an additional burden of considerable magnitude, postponing indefinitely the ordinary course, but it is at variance with the common belief of experienced teachers, and stultifies the intelligent deliberations and decisions of the Mathematical Association. If, on the other hand, the graphical course is to be assimilated along with ordinary lessons in algebra, it cannot be said to be "quite apart."

I have expressed my views on the teaching of graphs in The School World of April, 1905, and there is no need to repeat them here. They have been confirmed by the verdict of many correspondents whose intimate acquaintance with the needs of schoolboys entitles their opinion to respect; they coincide in the main with the proposals of other well-known contributors to The School World who from time to time have touched upon graphical algebra, and they suggest a course which is practically identical with the recommendations published in the *Mathematical Gazette* of December, 1907. Those of us who have had any practical acquaintance with a school curriculum, with its restrictions and limitations, are generally agreed that graphs can easily be overdone, and that they should be used as adjuncts and illustrations of ordinary algebra rather than substitutes. In a word, graphs should be subservient to algebra, not algebra to graphs.

The Mathematical Association, with its 500 members, represents one of the most important factors in the sphere of education. It has for some time past exercised a very beneficial influence on the teaching of elementary mathematics, and it has attained this end chiefly by its wise patience and moderation. It is to be hoped that its intelligent counsels, based upon the impregnable rock of practical experience, may long prevail over revolutionary experiments which have no powerful and consentient opinion to support them. Mankind is better served by nature's quiet and progressive changes than by earthquakes.

V.

By A. Clement Jones, M.A., Ph.D.

Senior Mathematical Master, Bradford Grammar School.

So far back as June and August in 1905 I was allowed, by the courtesy of the editors of The School World, to press at considerable length (*a*) the general adoption of some authoritative selection of an irreducible minimum of propositions in geometry and of a stated order, and (*b*) that practical drawing and graphs were only useful in so far as they assisted in illustrating and co-ordinating the three elementary branches of mathematics. I am more fully convinced after four years' further experience of the truth of these two propositions.

We have no need of generalised advice; what is needed is a common geometrical foundation in every school to replace Euclid. The suggestions in this direction made in the circular are good so far as they go. Propositions of like character should be grouped, and I. 4, 8, 26, 27, 29, 32 be taken as fundamental. But beyond this the circular contains vague suggestions, with optimistic statements of the results to be expected if these rather indefinite ideas are generally adopted. The criterion of success, we are told, is whether the pupil can or cannot do riders; the statement that "the student *must be capable* of doing riders" is essentially humorous: the English parent must look out; no penalty is fortunately attached. The only way to secure any such result is to have a definite and generally used sequence on which the

solution of riders can be based. At present the correction of geometry papers in public examinations is of a high order of difficulty. Results are quoted from all sorts of text-books, and the difficulty of a particular rider depends upon the text-book used.

I do not think rider-solving will be a consequence of the course suggested in the circular; we must in teaching pass from the easy to the difficult by a continuous process of training.

The suggestions made differ materially from those of the Mathematical Association Committee. To accept 13, 14, 15, group 4, 8, 26 and 27, 28, 29, is a better arrangement than that given by the Mathematical Association. It might be worth while stating here that the association's suggestions are not merely unauthoritative, but they do not represent the views of the teaching profession. The schoolmaster was represented on the committee almost entirely by men from the old public boarding schools. In such schools the boys are longer under our care and are of a comparatively uniform type; the masters in these schools are not inspected and have no experience of the principal difficulties which arise in modern schools. That, at least, is the opinion of one who has taught in both types of school. I think it is a fair comment, also, that the hurried publication of text-books based on these suggestions, before we had time even to consider them, added a commercial flavour to the proceedings which certainly did not enhance the value of the result.

On the whole, I do not think the suggestions in the circular are practical; given a foundation, geometrical teaching will right itself. Comparisons of schools are worthless; the standard of capacity varies too much. Moreover, it is too early to judge. It remains to be seen whether there is any life left in the subject after the mangling process of late years. Would any of us exchange our grounding in geometry for a modern course?

As may be gathered from my preliminary personal note, I agree with the general remarks on graphs. That "practical work is never to be an end in itself," "graphic work should not be treated as an end in itself," "that this work can take the place of much algebraical evaluation," were the themes of my early article. The work in most modern text-books is absurd, and is rightly dubbed "attenuated analytical geometry." The note on "plot 2^x" is useful. I have used this method many years; however, I fear I cannot claim that my pupils always get "a firm and vivid conviction" thereby. The conclusions of this section are profoundly welcome when compared with the Mathematical Association's suggestion (23) "that graphs be introduced as early as possible and be used extensively (certainly in connection with xy equations)."

VI.

By F. KETTLE, B.A.
The Clapham School, London, S.W.

THE circular must have come as a surprise even to those to whom the new teaching is no new thing. Official recognition too often intrudes itself when the battle's lost and won. Here, however, in this brief statement of the case for the higher teaching of mathematics there is no tardy or perfunctory acquiescence, no plea for compromise, no close apposition of Ayes and Noes, but a straightforward, clearly reasoned, and sequent description of the methods and ideals animating the best teaching.

We can scarcely doubt that the circular will do much to direct and give momentum to many young teachers already working in the spirit, if not with the knowledge, of its utterance.

The use of such documents is to pass the hour of day and to exhort workers to improve on its principles until its audacities shall have passed into the well-explored realm of platitude.

Still, for all its sobriety of statement, a remnant will view with alarm the complete supersession of Euclid. Of what avail to remind such a remnant that definitions naturally emerge, if at all, when something is known of the subject to be defined, or that parallelism, being a pure intuition, the propositions arising out of it are easily intelligible to quite young children; or that proof by superposition is mere deception unless the child is bright enough to see that a triangle, say, that has to be proved equal to another by superposition, has to be constructed first exactly similarly to the first triangle, and that, therefore, the proof amounts to saying with the logicians that $A=A$.

In conclusion, the new teaching is higher teaching, because (i) it refuses to separate practice from theory, deduction from induction; (ii) it covers more ground and extends enormously the horizon; (iii) it is highly interesting to the child himself, who experiences the joy of discovery and of action; (iv) it grades proofs, and never allows the idea to take root that proofs are absolute and consequently of equal value.

The coupling of graphical algebra with geometry in the circular points to a fact and to an inference. The fact is that geometry and algebra gain much interest and new significance by union, or, to put it another way, the self-expression of each is impossible in the absence of the other. To take a single instance, consider the value of geometry in endowing with meaning imaginary quantities, in the plotting of quadratic equations with imaginary roots, and in the idea of continuity. The inference is that the Board of Education has very little to say about algebra generally; possibly it realises that this subject is still a medley of meaningless exercises, and that some time must elapse and many pioneer journeys must have been made before any useful material will be in their hands for comment and elucidation.

VII.

By E. M. LANGLEY, M.A.
Senior Mathematical Master, Bedford Modern School.

I AM in hearty agreement with the main principles laid down. Not only are they those on which our scheme of work is to a great extent based, but I find that the detailed illustrations are in many cases just those which I have been in the habit of using. We have not, indeed, "let ourselves go" quite so freely as the writer of the circular seems to think we might have done; but, considering (i) that it is only eight years since any general movement was made in the direction of applying these principles; (ii) that it is only five years since the regulations of the dominant examining bodies made it possible for teachers to apply them; (iii) that some of the earliest attempts of enthusiasts to do so led to disastrous results, I cannot think that we have been unduly timid or cautious.

Even now I hope that the Board will be inclined rather to let teachers feel their way carefully towards the ideals of the circular than to insist on too sudden changes.

The great majority of those of us who have tried to increase the pace (I omit those, admittedly few, whose classes have been able, by a judicious neglect of logic, to get a serviceable knowledge of the subject-matter of Euclid's Books I. and III. in one year) probably differ in our practice from that now urged by the Board, chiefly in the second stage. But even here I believe the difference is not so great as it appears to be at first sight. Person-

ally, though, I admit having spent time in going through the ordinary proofs of the propositions out of the set I. 1–32 still commonly retained. But I have explained and illustrated the nature of these proofs by much practical and experimental work, and for many years—not merely since 1901—I have made a point of pushing through these quickly and getting on to those propositions (*e.g.*, book-work and riders on areas) in which a boy sees that the logic employed serves, not merely to show the possible derivation of a truth with which he was quite familiar from a set of axioms which he had much difficulty in understanding and remembering, but to convince him of the correctness of a construction which he might not have thought of himself, and to enable him to find other constructions he may need. The difference pointed out in the circular is a very real one. Those who have "taught geometry"—not, perhaps, those who have made their pupils "learn Euclid"—have long been familiar with it; but the circular probably does good service in directing general attention to it. It may be illustrated by the distinction between the *valet raisonneur* and the *valet raisonnable* of the French play.

There are, as pointed out in the introductory notice in THE SCHOOL WORLD for May, some apparent inconsistencies in the circular. They seem to me little more than apparent, and not likely to cause serious difficulty. Take, for instance, the "omission of riders" in one stage. The word "rider" has a wide range—from the "corollary" or inference almost "immediate" to the "ten-minute conundrum" of our undergraduate days. Presumably we are only barred from the use of the rider the connection of which with the theorem to which it is attached is not fairly obvious. Simple riders or corollaries seem to me calculated not "to dull the brilliance of the impression which it is essential that the propositions themselves should make," but, like the use of gas mantles, to render that brilliance more radiant. Leaving these and other points on which minor criticisms might be made on one side, I look upon the circular as weighty and valuable. The most valuable parts of it I take to be the recommendations for the third stage. The remarks on modifications of figure and the idea of motion, on loci and envelopes, are sound and pregnant. But valuable as these are, and delightful as it is to an old agitator for reform to see them embodied in an official circular, there is one other feature which I value still more, and that is the repeated insistence on the necessity of having a course of solid concurrent throughout with that of plane geometry. The suggestion that the elements of "descriptive geometry" should form part of such a course (p. 4, § 6) will, it is to be hoped, lead to good results. It is in connection with the work in solid geometry that the work in physics and manual training can, by due co-operation between the different departments, be made most helpful to the mathematical master. Personally, I have already begun to find the advantage of the experimental work done in the physical laboratory, and I feel sure that when our classes for manual training are in full working order I shall receive the same sort of advantage from them.

I notice one curious omission. The only graphical work dealt with is that of plotting graphs. Nothing is said about the treatment of the subject-matter of Book II., in which the connection between arithmetic and algebra on one hand, and geometry on the other, would find such natural illustration. And there is a negation in the final section of the summary that I should be glad to see made less emphatic. After the "not" in the phrase "not an introduction to analytical geometry" I should like to see the word "merely" or "mainly" inserted. Any sort of good work in plotting graphs must surely, with whatever view it was done, serve as an introduction to the methods of analytical geometry, though, like other introductions, it may not always lead to familiarity or close acquaintance. I should like to return to the consideration of graphical work later.

VIII.

By F. S. MACAULAY, M.A., D.Sc.
St. Paul's School.

I THINK that the report is a very valuable one, especially in its suggestions as to the objects that should be aimed at in the teaching of graphs in connection with elementary algebra. While I agree that only such parts of graphic work should be taught which are useful for algebra, I do not agree that the graphs of all implicit functions, and all reference to analytic geometry, should be excluded. I think that a boy should be taught to recognise the equation of a straight line and of a circle, and also that the graph of a quadratic function is a parabola the principal axis of which is parallel to the y-axis of coordinates.

Further, I do not understand what the report means by saying that graphic work should "not be treated as an end in itself." Only six lines earlier it appears to contradict this by saying: "the better boys . . . will then feel that an instrument of great power has been put into their hands."

The graphic work recommended would require a considerable amount of time and practice to master, but the time would be well spent.

IX.

By H. G. WILLIS, M.A.
Manchester Grammar School.

THE writer of this circular had, apparently, too much confidence in his own opinions to submit it to anyone else for revision. Had this been done, many dogmatic statements would have been toned down, and other methods than the writer's would have been admitted.

The tacit assumption that geometry is taught on account of its practical utility is open to dispute. If it is included in the school curriculum chiefly in order to develop logical and mathematical ability, many of the statements of this circular are very wide of the mark.

When it is stated on p. 2 that "some schools find it possible to cover *effectively* in a single year the substance of Euclid, Books I. and III.," in justice to the other schools I ask the meaning of "effectively."

The developing of theoretical work on an independent basis is condemned; what does this mean? Theoretical and practical geometry necessarily stand on different bases.

"Many terms again, adjacent, alternate, exterior, vertically opposite, &c., are not worth defining" (p. 4). How can they be "used consistently and accurately" unless they are defined? What boy could ever guess the meaning of the ἅπαξ λεγόμενον (?) "vertically"?

"To continue to teach that all geometry rests on anything like Euclid's axioms is false as well as unnecessary" (p. 5). Alas for the intelligence of all geometers, past and present, great and small!

"A clear conception of parallels as lines in the same direction" (p. 4). Woe is me! I have read many books supporting this view of parallels, but I have not yet got this clear conception, and so am quite incapable of leading my pupils to it. Are not the meridians on a globe in the same direction?

The "natural order" of the fundamental propositions is given as "Euc. I. 13–15, 27–29, 32; with 4, 8 and 26."

I am at one with the circular as to the omissions of Euc. I. 13, 14. How can I. 8 be proved without I. 5? If parallels must be taken early, let us boldly assume the equality of corresponding angles, telling our pupils that the sound treatment is deferred. Anything is better than this subterfuge of "same direction." Being a teacher and not an inspector, I lay myself open to the charge of presumption by suggesting, instead of Playfair's, the rotation axiom, which at once proves I. 32, and then putting the parallels much later, and using the limit definition of parallels.

If these propositions are to be assumed as "matters of common knowledge," why not consistently dispose thus of many other propositions, some of which are matters of even commoner knowledge, and are more "luminously self-evident"?

There are many other points on which, did space permit, I should like to comment. The foregoing remarks must not be taken to imply that I disagree with everything in this circular. It contains many valuable and useful suggestions, and he must be a most efficient teacher who cannot derive benefit from its perusal.

THE TEACHING OF EDUCATIONAL HANDWORK.[1]

By CHARLES BIRD,
Superintendent of Educational Handwork to the Leicester Education Committee.

Two features of our present-day civilisation, which make handwork even more important in any reasonable educational system than in the past, are the changed character of the home and the altered conditions of industry. The vital necessity of the hand in all conditions of later life is very evident; in translating abstract ideas into concrete form, and in portraying pure knowledge and genius, it is indispensable. By handwork is judged the harmony of the conscious mind and the senses; it is the world's standard for judging the brain of the artist, musician, man of science, and artisan; yet it is seldom used to the utmost in training the brain of a child.

Let us inquire into the reason why educational handwork, strenuously advocated as it has been by some of the best thinkers for 500 years, has as yet failed to become universally used as a means of education. Is it not custom—simply custom? We ourselves were "educated" on a certain plan, and have been "educating" on that plan until we have come to look upon it as necessarily right—a method fixed and inevitable. Knowing little or nothing of educational handwork, some regard it as a "fad" and a nuisance.

The schools of the Middle Ages, upon which our people's schools were founded, were for the privileged classes, who despised manual labour. When we consider that nine-tenths of the people are engaged in occupations depending upon manual work, more or less, the present discontent with our educational methods becomes easy of explanation. In this connection Sir Philip Magnus remarks: "Is it not true that we have annexed the methods and subjects of teaching which have been employed during many centuries in the training of the few, and applied them to the education of the people as a whole—to those who are engaged in the very callings which were more or less contemned? Surely it is so, and the results are all too manifest."

When manual training was first introduced, the cry was for technical education. The Education Department offered a grant for a kind of juvenile technology. The name carpentry, which, we must remember, stands for an idea, is not yet extinct among either teachers, parents, or scholars. Certain joints and exercises were to be made; these, with conundrums in the shape of drawings and much detailed information relative to the number of teeth that different saws possess, and the like, were required at the annual examination. Thus the giving of information and instruction in various operations became the end in view.

Quite recently an entire change has come over the view of the Department with regard to the matter. In the meantime the mischief has been done—an attitude of mind towards the work has been created which has caused it to become largely stereotyped on the following lines. The teacher makes the object, whole or in part, in front of the class, every difficulty and the use of every tool being carefully shown and explained. Even then the pupil is not left to his own resources—directions as to the method of procedure, in varying degrees of minuteness, either verbal or otherwise, hedge and cramp him at every step; by these means, having stifled whatever originality and resourcefulness the scholars possess, their stupidity is made the excuse for the method. I think teachers can hardly be blamed for failing to see the usefulness of this kind of school work, but I am afraid it will be a considerable time before a complete change is effected.

Hitherto our schemes of education have depended upon adult ideas as to what children require for their development. We now see that the needs and desires of children are necessarily different from our own, and if we would help, instead of hinder and thwart that development, we must study the child. In the first few years of his life the child has absorbed an enormous amount of knowledge of vital importance to his very existence; his every sense is quivering for fresh experiences and fresh power, even in the most narrow and gloomy surroundings. Watch his vast unaided conquests, his fertile, ingenious brain; his vivid imagination, and his intense excitement over little things which have long ago ceased to interest us. His great delight is in feeling, seeing, hearing, tasting, and smelling, especially in feeling and seeing. He stores up truths in harmonious order unconsciously in his little mind, and weeds out the false from the true—that most potent factor in all animal life in the war of self-preservation—with the unerring instinct of unsophisticated nature. The child finds his interests in the multitudinous affairs of home, garden, street, and field; his play and his work bring him into intimate relationship with the visible world around him.

I do not think we sufficiently take into account the tremendous difference to a child between the work and freedom of its home life and the work and restrictions, often needless and even ridiculous, of the school. It is a new and often incomprehensible world.

In the typical school of the period, little or no provision is made for educating the child through these all-absorbing interests and activities, and yet it is through his interests alone the child can be developed, for if a child lacks interest it is folly to expect him to absorb knowledge; the faint impression produced soon fades away. On the other hand, however, if the interest be awakened, the teacher's task is changed from a hard, unnatural, and unfruitful labour to a pleasant guidance.

[1] From a paper read at the Morecambe conference of the National Union of Teachers on April 14th.

Foremost among the reasons for making educational handwork an essential part of the school method is the interest it creates in the children. If a reasonable method be adopted, not interest merely, but enthusiasm will be the result.

It will hardly be denied that the normal child possesses in a marked degree such characteristics as curiosity, inquisitiveness, a love of prying into things, of questioning and doubting, which are frequently amusing and sometimes embarrassing. Of his originality, adaptability, resourcefulness, and independence there can be no possible doubt. It is these characteristics, so pre-eminent in their importance as assets in after life, which a reasonable system of educational handwork can stimulate and strengthen. It is greatly to be feared these characteristics have not been strengthened, but rather weakened, by the educational method of the past.

For this purpose the children must be allowed to depend upon their own thought and judgment in doing things. If the work given be interesting in character, and not too difficult for mind and hand to fashion, surely the children may be allowed to exercise their whole powers upon it without let or hindrance; where unreasonableness is shown, failure to adapt means to ends and the like, the cause is discoverable, and it is the business of the teacher to see that the children discover it. Let the children see, think, and do; later may possibly be the time for explanations, surely not before.

As regards moral development, it may be noticed that, under the conditions mentioned, the children are *revealing* themselves. Their own thoughts, ideas, words, and actions are what we seek and require. It can hardly be questioned that an atmosphere, an environment favourable for moral growth is thus created. Character depends largely upon action; it must therefore be all-important that the activity be mental as well as physical. Strenuous intellectual and bodily work, done in a free atmosphere, must call for the exercise of moral qualities of the highest order, and help to develop a power to concentrate the attention and a courage to persevere which cannot fail to be of the greatest service in after life.

I have attempted to realise these aims in the following manner. For each standard I have drawn up a series of models—a scheme of work in material. These models, wherever the materials allow it, are all useful articles or toys, and interesting from the children's point of view. The series is constantly being altered.

The dominant note of the whole of the courses of models is simplicity. They depend for their beauty, if the charity of critics will allow any, upon good proportion and a simple outline adapted to the purpose for which they are intended, rather than upon elaborations of any kind. This simplicity is necessary; the work is to be the result of the children's own thought—the activities are to be self-directed, and the experience gained to be really first-hand. The courses are used so as to stimulate the inventive faculty; the children are encouraged to use the class model merely as a standard, something to which reference can be made to show essential features, &c., details being left to their own initiative.

The method of teaching is the same in each of the courses.

The first model in each course is intended to be the simplest possible for the material, such as a little ball in the plastic media, a little mat in cane, a simple rule in wood, &c. The grading is by very easy steps, so that the least developed child can surmount the difficulties. As the teacher begins to find out the capacities and capabilities of the children, provision is made for the quicker ones by allowing them to miss models here and there, and so arrive at the more difficult ones quicker. This method is adopted with classes working the same model, and when each individual is doing a different one.

As an example of the manner of dealing with the handwork, let us take the first model of any course. This model is made by the teacher previous to the lesson, so that the children do not see how the work has been done. The model is shown to the children, and they are asked to tell all they can about it. Whatever information is given comes from *the children's own initiative*, not from the promptings of the teacher. It is evident that the more senses which are employed in conveying the impressions to the mind, and the nearer the senses are to the object, the deeper and the more truthful will those impressions be. It is therefore reasonable that every sense be brought to bear that can be of service. The children are required to give expression to these impressions in clear and exact language. This part of the work is never omitted, but it is often deferred to the end of the lesson. Similar observational and critical lessons are taken on every tool, material, &c., employed in the work. It is very important that these expressions of sense impression be encouraged by every possible means, and that, of course, in as many different ways as possible—by drawing, in material, by writing, painting, &c., but especially by *word*, the common method of intercourse between human beings. How loose and inexact the language of ordinary school children is!

It can generally be arranged that each child has a model, tool, piece of material, &c., in his hand when giving oral expression to his sense impressions. The children must be required to dig deeper and deeper into the matter as time goes by, until nothing is concealed that can be revealed. This ample and extensive, not to say profound, revelation of the object must come entirely from the children—they must *not* be told. It appears to me to be a sound principle to act upon that children should know "*everything about something.*" Has the shallowness of the age of which one hears so much anything to do with beginning too soon to learn "*something about everything*"? Anyway, as the child is to be his own engineer in this matter, he must know all his senses can tell him of the thing, or the hiatus will cause illogical thinking and poor execution.

The model is thus reviewed and criticised from every aspect that the ingenuity of the children can devise. They are now required to draw it or get material and make it, as the case may be. The teacher watches the proceedings with "masterly inactivity," as a Government inspector named the attitude of one of my teachers the other day. When sufficient, reasonable and unreasonable, methods of attacking whatever problem awaits solution have been observed, the teacher calls a halt. The methods, tools used, &c., are all brought to the notice of the scholars and freely and critically discussed by them.

I think it very important that the teacher should not bias the children in their judgments; each and all must, and will, take a part in questioning, in Socratic vein, the various methods brought to their notice; other methods, also, must be obtained from the children. There is a discoverable reason why one method is better than another, if it be better; one tool more adapted to the purpose in hand than another, &c. If we wish children to develop a reasonable judgment in all things, as we surely do, we must on no account discover for them what they can discover for themselves. And what can they not discover?

The teaching proceeds on these lines throughout. It will be understood that the unreasonableness tends to

apply to the individual rather than the class as the work proceeds; hence the criticism tends to become individual. My experience is that children treated in this way—left to their own resources for their seeing, thinking, and doing, and then examined critically in every detail of their action—become more and more reasonable as time goes by. Uniformity of method—in other words, the teacher's method—is not even desirable. What is wanted is that each child shall find its own method. If the children reveal themselves, the teacher can act from sure knowledge of strengths and weaknesses, of needs and necessities. Otherwise, if the teacher supplies the method, the children are robbed of their natural inquisitiveness and curiosity, and may become mere storehouses of dead information.

It is perhaps necessary to say a few words with regard to the accuracy of the finished work it is reasonable to demand. I say "perhaps," because some will doubtless be wondering how a method, entirely voluntary and dependent for its success upon the interest it creates in the children, can or need "demand." If the right atmosphere is there, the children will give freely and spontaneously all they have the power to give as regards accuracy and the other virtues, and the power to give will grow by the exercise. Cramping the outlook by an unwise insistence on a single point will not tend to harmonious development. The thinking required in planning, arranging, and adapting means to ends must not be subordinated to a machine-like accuracy; indeed, if each model is the product of a different mind, as it should be, we must not demand too much uniformity in the products. The work must be interesting from the children's point of view, done under conditions that call for the maximum of brain effort from them, and given to the children as soon as finished, so that they can take it home and thus create fresh interests there. In these circumstances, not only will the power to work accurately grow, but other beautiful phases of character will unfold, for the *desire* for these excellences will grow. If the desire does not grow, it is a desert we are making where an Eden should flourish. Some day we shall be too wise to judge shows of models, or, indeed, of anything, as absolute proofs of educational efficiency. If we look at the children and their work in conjunction, we *may* learn many things which otherwise would never be known.

CAMBRIDGE LOCAL EXAMINATIONS, 1908.

HINTS FOR TEACHERS FROM THE EXAMINERS' REPORTS.

COMPULSORY SECTION.—In the July examination in *Arithmetic* a number of the *Preliminary* candidates did not know the difference between Greatest Common Measure and Least Common Multiple. The fractions were fairly done, though many of the candidates did not understand how to place the decimal point in the division of one decimal by another, and, where the second part of the question involved the same numbers with the decimal points differently placed, almost all the candidates worked the division over again. More candidates than would have been expected made a mistake in giving the nearest integer; it seemed to be their rule to give the integer above, however small the fraction might be. In the December examination more mistakes than usual were made in the easy question on multiplication and numeration. In attempting to find the Greatest Common Measure of three quantities many stumbled, often stopping short after finding the Greatest Common Measure of two of the quantities only. In fractions the most common blunder was a confusion of sign. It was again noticeable that whilst the majority of the candidates succeeded with the question on interest, many found greater difficulty with a similar but easier question on percentage.

The chief weakness in arithmetic shown by *Junior* candidates was in decimals and decimal measures. Many candidates seemed quite unfamiliar with the decimal system, and others still adopted the absurd practice of converting into vulgar fractions. The habit of beginning a sum by making a rough estimate of the approximate answer ought to be encouraged strongly. The use of algebra was common and the equations were usually correct, but many careless errors were made in solving them. Much confusion of thought and expression prevailed, and many candidates seemed to think that so long as an answer was obtained nothing else mattered. Many lost marks by not giving answers in the form asked for. Fractional answers were frequently given when it was obvious that the solution must be integral, and palpably impossible answers were frequent.

In July a very large number of *Senior* candidates failed to find the L.C.M. of three numbers of which some of the prime factors contained two figures. In December the weaker senior candidates did much bad work in dealing with decimal fractions; many reduced them unnecessarily to vulgar fractions; others applied them to simple questions of money in such a way as to preclude exact results; many employed clumsy methods of finding compound interest, not using decimals at all, and generally with incorrect results. A problem which could be solved simply by the use of an algebraic equation was generally done in this way by the boys, but rarely by the girls, many of whom wrote down much work on lines that were quite wrong.

ENGLISH SUBJECTS.—In the correction of faulty sentences most of the *Junior* candidates were very weak, displaying great ignorance of the use of the relative pronouns. In combining several sentences into one complex whole, most of these candidates failed to do well through their lack of knowledge of the distinction between "complex" and "compound."

In July the attempts of *Senior* candidates at paraphrase were not, on the whole, successful, and many of the candidates failed to see the connection of thought running through the passage. In December the question on the explanation of difficult words was passed over altogether in a large number of cases. In July the emendation of faulty sentences showed the usual mistakes; the term "sequence of tense" was frequently used and almost invariably misapplied.

The text of the play, "The Merchant of Venice," was superficially familiar to the large majority of the *Senior* candidates; unfamiliar allusions had been carefully noted and prepared in most instances, and the selected passages were easily identified; but there were signs that the real meaning of the language, even where not difficult, had been rather carelessly studied and imperfectly understood. This want of intelligence was nowhere so conspicuous as in the paraphrasing, which, especially in July, was very bad. The best answers to the more general questions were marred by a tendency to wordiness and irrelevance. This tendency was less noticeable in December than in July; and in both examinations the girls showed some improvement as compared with their predecessors in recent years, though very many of them still seemed to consider length of more importance than correctness.

Scarcely any of the essays of *Senior* candidates on Lamb, or on Lamb and Steele compared, were of any value; and, on the whole, questions demanding a little independent thought received poor treatment where they were not avoided altogether. The paraphrasing was marked by a slavish adherence to the language of the original, and in the case of "Coriolanus" showed a very imperfect grasp of the meaning.

Many *Senior* candidates taking *English Literature* were ignorant of the meaning of the simplest literary terms, such as tragedy and comedy. The best answers were, on the whole, called forth by the questions relating to works and characters of Shakespeare and the Victorian novelists.

The answers of *Junior* candidates in *English History* calling for thought were usually avoided, and were, as a rule, very badly done even by the few who attempted them. There was a general ignorance of even the outlines of constitutional history, and it was quite evident that the great majority of the candidates had been taught merely a list of facts and dates, and had failed to grasp their significance. The questions which touched upon nineteenth-century history were very poorly answered by almost all who tried them.

The general standard of attainment among *Senior* candidates was slightly higher in December than in July, but on both occasions the same faults were observable, namely, a want of a habit of reflection upon causes and results, and a tendency to substitute narrative for analysis or criticism. Possibly the length of the periods, and the shortness of the time usually given to history in boys' schools, tend to prevent more than the acquisition of facts being attained. Even the facts of the history before the Norman Conquest were not well known; few candidates had been taught anything about the reasons for the rise of Wessex; few knew anything about Edward the Confessor's reign. Few knew what is meant by "sea-power." In the questions about the effects of the French War and the Wars of the Roses upon Parliament, and on the effects of the Revolution of 1688 upon English action in European politics, it was clear that the consideration of effects was strange to many. To the question upon the consequences of certain battles answers ignoring any consequences were frequent.

The outline-maps in the *Geography* papers of *Preliminary* candidates were in the main well done; but in giving information as to specific places, the candidates often stated trivial and even ridiculous details, instead of some staple industry or other important geographical or historical fact. In the case of the *Juniors*, some answers relating to physical geography were good, but the amount of guess-work showed that this branch of the subject had not received the attention it deserves. The outline-maps were filled in poorly, and the sketch-maps were often drawn on too small a scale. Rivers were made to run the wrong way—a mistake almost as common and disastrous as the confusion of east and west. Many *Senior* candidates had heard of the Rift Valleys, but almost invariably included in them precisely those lakes which are outside. Africa, indeed, seemed to be still the Dark Continent to most, and many had evidently been taught from works issued before Johannesburg came into existence. Several papers were well illustrated by good maps, but in far too many cases no maps of any kind were given. There was too much evidence of a desire to indulge in vague generalisations, without the basis of sound facts.

CLASSICAL SECTION.—The least satisfactory part of the *Latin* work of *Preliminary* candidates was the conjugation of verbs. In the set books the work showed much evidence of incomplete and hasty preparation; in the majority of cases the translations were either loose or absurd, and the parsing was seldom attempted and still more seldom done correctly. The unprepared translation was really better done than the prepared. Where there was failure it was due, not to want of vocabulary, but to want of training in analysis and method of dealing with the compound sentence. In the composition there was a good deal of work in which the accidence was very bad.

Points of grammar were too often dismissed by *Junior* candidates with vague and insufficient treatment. In the July examination the declension of substantives was, on the whole, satisfactory, but in the declension of adjectives considerable weakness was shown. The parsing lacked system and completeness, but was attempted seriously by most of the candidates. Only a few seemed to know the commonly accepted abbreviations of grammatical terms. The same lack of method in parsing was noticeable in the work of many candidates in the December examination, and much weakness appeared in the answers to the question dealing with the conjugation of verbs. But a much higher standard was maintained almost throughout in the declension of substantives, pronouns, and adjectives, and also in the comparison of adjectives, with the result that the percentage of failures was exceptionally low. In the easy unprepared translation there was a very remarkable difference between the standard attained by the candidates in this examination and that attained in July, though in the latter there was an improvement on the previous year. The cause of failure was very seldom ignorance of the meaning of words, but was, as a rule, inability to discover the construction of any sentence which was in any way involved or of unusual length. There was considerable weakness in the translation of tenses of verbs.

The *Senior* candidates, as a rule, were weakest in the explanation of short extracts. Many of them had not advanced beyond the stage of setting down over again in their own words the substance of the passage which they had already translated, ignoring the difficulty, whether of grammar or subject-matter, which required elucidation.

MODERN LANGUAGES SECTION.—In *French* weakness was shown in the use of the verbs and of possessive and demonstrative adjectives and pronouns by *Preliminary* candidates. Errors in spelling were fairly frequent among *Junior* candidates, many words being apparently spelled by ear. In the short sentences for translation into French the work was, with few exceptions, weak, displaying both an ignorance of common idioms and a want of correctness in spelling. The composition was, on the whole, creditable, but the majority of the exercises were marred by a misuse of the past tenses and of personal terminations in the verbs, by ignorance of the genders of common words, and by faulty spelling. The general impression produced was that, while time and pains had evidently been devoted to the oral teaching of French, the writing of the language had not received sufficient attention. In *spoken* French the similarity in spelling of French and English words, *e.g.*, *fatal*, often led the *Juniors* to mispronunciation. Many of the candidates evidently had a large vocabulary, and showed good power of comprehension of the questions put to them, but they often did not pay sufficient attention to grammatical accuracy in their answers. The dictation, although distinctly better in some schools, was still written very indifferently by the majority of the candidates. More time and care should be devoted to this very important part of the examination.

The knowledge of grammar shown by *Senior* candidates was, on the whole, unsatisfactory. In the easy unprepared

translation the poverty of vocabulary of a considerable proportion of the candidates was surprising. In the unprepared translation of ordinary difficulty a fair number saw the main gist of the passage and did well; those who lost their grasp of it were tempted to fill their paper with a word for word equivalent which made no sense. A considerable number of the candidates showed a fair conversational knowledge of the French language. The dictation was responsible for numerous failures. Many of the mistakes were bad grammatical blunders and impossible concords, and ought to have been avoided by more care. At several schools insufficient practice had evidently been given in this important subject.

MATHEMATICAL SECTION.—In using a protractor in their *Geometry* answers, many *Preliminary* candidates could not distinguish between an angle and its supplement, and consequently mistakes were made between acute and obtuse angles, both in drawing and in measuring. Some candidates still used centimetres for inches, and *vice versa*. Many of the candidates made a strange jumble of decimal and vulgar fractions, giving such answers as "6·7$\frac{3}{4}$ cm." for "6·775 cm." In few cases was an attempt made to employ any construction for drawing a tangent to a circle from an external point, other than the use of a ruler. In July a volume which had to be measured was often estimated in *square* inches.

At many centres the work of *Junior* candidates was excellent, but at not a few all the work sent up was so bad that it was difficult to believe that the candidates had had any instruction whatever. The geometrical terms "touch," "altitude," and "coincide" were frequently misapplied, and ignorance of this kind often prevented candidates from answering correctly the questions on constructions. In dealing with these questions many candidates failed to show clearly all the lines required. Few candidates seemed to understand the properties of similar figures.

Many *Senior* candidates sent up work which was far from satisfactory. The proofs given of important book-work theorems were often faulty, sometimes through carelessness, but more often because the reasoning had not been really understood—especially in the case of the propositions Euclid I. 5 and VI. 4 in the July examination, and Euclid I. 26 and VI. 2 in the December examination. In the solution of questions which involved constructions there was too much tendency to rely on the eye in drawing instead of using geometrical processes.

In *Algebra* the work of *Preliminary* candidates in both examinations was, as a whole, fair, the answers to the easier questions being generally written out with neatness and accuracy. In December the numerical verification of answers was nearly always incomplete, very few candidates appearing to appreciate the meaning of numerical verification of algebraic operations. In July work with literal coefficients was weak. In both examinations many failures in simplification and in the solution of equations were due to ignorance of the rule of signs, many candidates making no change when a bracket following a negative sign was removed. In December work in quadratics was weak; far too many, in attempting to quote the formulæ for the roots of the general quadratic, either misquoted or failed to make the proper substitutions.

In the more elementary part of the paper the work of *Junior* candidates in July was far from satisfactory, questions on the simplification of fractions and on square root being very badly done. There was, however, a distinct improvement in December, when the most noticeable weakness was in the solution of a pair of simultaneous equations of the first degree with literal coefficients. Remarkably few candidates solved these correctly, while a great many sent up x in terms of y, and *vice versa*.

A considerable number of the *Senior* candidates did not really understand logarithms; many were unable to deduce the anti-logarithms from a table of logarithms. In December the solutions of the equation with literal coefficients were usually wrong. Very few candidates understood how to simplify indices. There were a few excellent sets of answers to the more advanced questions, but on the whole very few of those who attempted them really knew anything about the work.

NATURAL SCIENCES SECTION.—In former years the answers of *Junior* candidates in *Experimental Science* generally showed that more attention had been paid to the chemistry than to the physics in the schedule. In 1908 there was much less disparity between the work in these two parts of the subject. In the answers to chemical questions there was again a tendency to confuse together the properties of different substances, especially in the case of the common gases.

Very few *Preliminary* candidates taking *Chemistry* knew how to separate water from air, though they must have noticed the dew deposited on a cold surface. The answers to a simple question on crystallisation were generally worthless.

The poor answers of *Junior* candidates were those on points requiring clear ideas on the law of multiple proportions and the meaning of combustion and crystallisation, and far too many candidates were unable to obtain the weight of a simple gas from the weight of a litre of hydrogen.

In July most of the *Junior* candidates taking up *Heat* were sufficiently prepared. Weakness, however, was generally shown in the answers to a question about the generation of heat in a bicycle pump. In December many failed to do a simple numerical example in calorimetry, and many thought that a gas at high pressure was necessarily at a high temperature.

The work of *Junior* candidates in *Sound and Light*, taken as a whole, was of a very low standard in both examinations, and the percentage of failures was very high. In the July examination many of the candidates seemed unfamiliar with the simplest optical terms, and failed to distinguish between reflexion and refraction, a mirror and a lens, a prism and a plate. In both examinations many did not know the meaning of the term homogeneous. In December very few of the candidates paid any attention to the word "experiment."

The work in *Botany* of *Preliminary* candidates left much to be desired. The instruction had not been practical enough, and the candidates often described natural objects in such a way as to make it evident that they had not seen them. This was particularly noticeable in the case of floral structures. In the December examination the knowledge displayed by *Juniors* of elementary morphology was extremely deficient. With few exceptions, the candidates showed a very poor conception of the elements of plant physiology, and it was impossible to resist the conclusion that this part of the subject had not been efficiently taught. The many inaccuracies in the description of experiments produced an impression that the apparatus had been arranged by the teacher, and that the students had had no opportunity of performing the experiments themselves. Few of the *Senior* candidates understood the proper use of sketches in answering a question. A large number of elaborate sketches were given which did not illustrate any important point, and sketches of importance

—*e.g.*, that of the vertical section of the flower—were either omitted altogether or were incorrect or small and confused.

In the answers of *Junior* candidates in *Physical Geography*, the practical question in the December examination, having been set in a subject which comes within the everyday experience of the candidates, was almost universally attempted, and commonly with more or less success; a small proportion of the girls did not understand the difference between a ground plan and a sketch. The results of practical teaching were more evident than in former years, yet only a very small proportion of the candidates appeared to have ever seen a rain-gauge. Most of the *Senior* candidates showed a very insufficient knowledge of the subject. The questions on mathematical geography and on earth movements were especially badly done. Many candidates in the July examination did not know how to find the Pole Star, and a very small proportion at either examination were able to construct a map projection. The accounts of the action of the sea, the formation of valleys, and similar subjects were in most cases very meagre. On the whole, the candidates appeared to be more familiar with the meteorological side of the subject, the answers to the questions on climate and weather being amongst the best. There was, however, very little evidence of personal observation or of any practical acquaintance with the simpler meteorological instruments.

HISTORY AND CURRENT EVENTS.

THE kingdom of the Netherlands has at last an heiress, and the Dutch are rejoicing thereat. For if Queen Wilhelmina had remained childless, the crown would have gone to some distant German relation, the country would be entangled in German politics, and even run a risk of losing its independence. We are reminded of previous instances in the history of our own and other countries which have hereditary monarchs of similar dangers sometimes incurred. The Netherlands themselves passed in the fifteenth century, through failure of male heirs, into the possession of the Habsburgs of Austria, and hence into the possession of Spanish kings. It was under William the Silent, the first great ancestor of the present Queen of the Netherlands, that the seven "united provinces" revolted against Spanish rule and finally made good their independence. The birth of Edward VI. was regarded by Latimer as the work of "a God of England" or even of "an English God," because it seemed to promise deliverance from a disputed succession. And thus we need not be surprised at the joy of the Dutch, even at the birth of a daughter, because there the Salic law does not prevail, and the succession in the House of Orange is, at least for the present, secured.

A PARAGRAPH which appeared lately in the daily papers concerning a rearrangement in the affairs of Messrs. Pickford, the carriers, incidentally mentioned the age of the firm. It dates from the seventeenth century, and is thus an example of certain institutions existing in this country which have come to be household words. They are private, not governmental, concerns. Yet they are as much a part of the apparently and probably permanent machinery of the nation's life as the Government and its various branches. One of the most famous of these is Lloyds, the beginning of which dates back also to the seventeenth century. The first Lloyd was the keeper of a coffee-house in the City where merchants resorted, and these founded the institution which is now the established centre of the shipping world. The name became so famous that an Austrian imitation thereof has called itself the "Austrian Lloyds," and, like its prototype, has a fleet of steamers. Similarly we might speak of the Bank of England and of other banks and some assurance societies which are part of our commercial history.

So Joan of Arc, as we commonly call her in England, has come to her own at last. There are some who believe that she was not burnt at Rouen in 1431; but the evidence for that tragedy is too strong to affect the universal verdict of modern historians. Accepting, therefore, the orthodox belief on that subject, we can say that, after nearly five centuries, the Maid of Orleans has received full justification, and that while she was burnt as a heretic she has now been beatified and ranks next only to the Saints. The events of the two years of her military career are well known, but discussion is still maintained over the insoluble part of her life at Domremy. We are too far from the passions of that time to dismiss the matter as easily as Shakespeare does in his historical play, but whether visions are possible, and, if not, what is the true explanation of her inspiration, are problems which lend themselves to endless speculation because certainty is impossible.

THE death of Algernon Charles Swinburne in April recalls to some of us not so much the poet as the enthusiastic admirer of Mazzini and the events of 1860–70, during which Italy achieved unity under Victor Emmanuel of Sardinia. The problem of that period, as of the previous struggles in 1848–9, was the form which united Italy should take. All were agreed that it should be united and should include more than is at present the kingdom of Italy. But whether there should be a federation of the various States under the Pope, as some desired, or in some other way, or whether there should be a unitary State such as exists to-day, was then a debatable matter. Whether there should be a republic, as in the old days of classic Rome, or whether the peninsula should unite under the leadership of Victor Emmanuel, was a matter of conflict between Mazzini and his friends on one hand, and Cavour, the Sardinian Minister, on the other. How events decided these questions rather than argument may be read in any of the numerous books devoted to the subject.

ITEMS OF INTEREST.

GENERAL.

THE thirty-fifth annual conference of the Association of Head-mistresses will be held on June 11th and 12th at the North London Collegiate School, under the presidency of Mrs. Woodhouse. Several important subjects will be considered at the meeting. Last year the conference adopted a resolution disapproving of external examinations for girls under fifteen years of age. It will be proposed at the forthcoming meeting that the words "under sixteen years of age" be substituted for "under fifteen years of age." The conference will also be asked to pass a resolution to the effect that inspection by a duly qualified doctor shall be made compulsory for all children entering a public secondary school. A series of resolutions on registration will be submitted to the conference, and there will be a discussion on "Games."

AN extraordinary general meeting of the Association of Assistant-mistresses was held on May 22nd, at 2.30 p.m.,

at the Leeds High School, Leeds. The proceedings commenced with a business meeting for members only, when reports were received and certain points connected with the formation of a Teachers' Register considered. Afterwards a paper on the Moral Education Congress and its bearing on the work of members of the association was read by Miss E. G. Skeat, of the Queen's School, Chester.

THE summer meeting of the English Association will be held at University College, Gower Street, on June 11th. Mr. Sidney Lee will deliver a lecture on "The Impersonality of Shakespeare's Art." The Right Hon. A. H. D. Acland will preside, and there will be an informal reception after the lecture.

THE annual conference of the Association of Teachers in Technical Institutions will be held this year at Liverpool, and will open on Whit Monday. The presidential address will be delivered by Mr. J. Wilson, and during the conference important resolutions relating to the improvement of technical education will be discussed.

A NATURE-STUDY exhibition, organised by the Nature-Study Society, will be held at the Royal Botanic Gardens, Regent's Park, N.W., on Friday and Saturday, June 4th and 5th. The exhibition will include aquaria, vivaria, and other means of observing animals, with photographic and microscopic illustrations. Tickets and all particulars may be obtained of Miss Winifred de Lisle, hon. sec. of the exhibition committee, 58, Tyrwhitt Road, Brockley, S.E.

MR. J. H. YOXALL, M.P., has undertaken to edit a new series of *The Schoolmaster*, which will commence on June 5th. This old-established weekly will continue its customary features, and is to remain the organ of the National Union of Teachers.

MISS L. EDNA WALTER is arranging to take another party to Switzerland on August 3rd. The party will be organised for a fortnight or three weeks, and the time will be spent at Hospenthal and Urigen. Hospenthal (4,870 ft.) is at the junction of the Gothard and Furka roads, and Urigen (4,067 ft.) is in a charming situation on the Klausen Pass. Second-class carriages will be reserved from London, and the route is *via* Dover, Calais, Basle, Lucerne, and Fluelen. The cost of the holiday will be 10½ guineas for the fortnight and 13 guineas for three weeks. The tickets are available for twenty-five days, and those who wish to prolong their stay can easily arrange to visit the Italian Lakes, other places in Switzerland, or Paris. Further information will be supplied by Miss Walter, 38, Woodberry Grove, Finsbury Park, N., and application should be made soon, as the party is limited in number.

A DEPUTATION waited upon Mr. Runciman, the President of the Board of Education, on May 11th, to urge that through the Education Code the local education authorities should be encouraged to provide, wherever practicable, for direct systematic and graduated moral instruction, and that the Board of Education should require all training colleges to provide instruction in the methods of imparting direct systematic and graduated moral instruction. Mr. Runciman, in the course of his reply, told the deputation frankly that he must leave moral education exactly where it is now in the Code, that is to say, the teacher is to decide the form which moral instruction shall take. He will consider the question of giving moral instruction in training colleges. If moral education is to be a thing kept by itself it will not do much good to the children or to the teacher, and if it cannot be brought into the whole school life of the teacher and of the pupil it cannot be very beneficial.

THE Board of Education has issued its Regulations for the Training of Teachers of Domestic Subjects (Cd. 4603, 1½*d.*). Provision is made for diplomas in cookery, laundry-work, housewifery, and combined domestic subjects. A list of recognised training schools and their fees, &c., is appended. There are no material differences from the 1908 regulations.

THE recent report of the Board of Education contained a note in regard to the training of teachers for secondary schools, which we hope is a prelude to a better state of things than exists at present. After 1911 the Board will require students in training in respect of whom grants are made either to have graduated or possess equivalents to a degree. The Board wishes the work of training teachers for secondary schools to be in the hands of those who have acquired experience and reputation in such schools. To gain this end, the regulations require that grants-in-aid should primarily affect the salaries paid to the training staff.

REPLYING to discussion in the House of Commons, Mr. Runciman said that one of the best pieces of work that could be undertaken by this or any other Board of Education was the carrying on of the good work of the elementary schools in continuation or evening classes, whichever might be best fitted for the industrial conditions. From the *Times* report, we learn that the report of the departmental committee appointed by the Minister of Education to inquire into the half-time system will shortly be presented. Also that a consultative committee has been collecting evidence and working out schemes for continuation schools. In the same speech Mr. Runciman referred to the detriment which we suffer in England through allowing our children to leave the elementary schools at a lower age than the Scots do.

AT the end of April the Prince and Princess of Wales opened the Edgar Allen Library at Sheffield University. We are glad to report the success and popularity of this ceremony, as it is of prime importance for the prestige of educational institutions generally that royal recognition should be given to their work. The University may be congratulated on obtaining a handsome building, with accommodation for 120,000 volumes, through the liberality of Mr. Allen.

THE Education Committee of the London County Council has expressed the opinion that the regulations of the Board of Education relating to free places "lead, in certain cases, to the expenditure of public money in providing academic education for pupils who are more fitted for industrial than for clerical or scholastic pursuits, and have the effect of encouraging boys to become inferior clerks instead of good artisans."

WE dealt last month with the Morecambe Conference of the National Union of Teachers. One cause for congratulation arising out of the work of the union is in danger of being overlooked by the outside public on account of its non-controversial character. We refer to the steady progress made by the Teachers' Provident Society. The thirty-second annual report disclosed a gratifying state of affairs, 2,690 new members having been admitted last year, while the funds rose to the large sum of £334,509. The general treasurer prophesied that very shortly the annual income of the society would amount to a quarter

of a million. The expenses of management are 5·3 per cent. on the premium income.

THE University of Washington offers a four-year course, leading to the degree of Bachelor of Science in Domestic Economy, for students who wish to specialise in that subject with the view of teaching it in the high schools. Only the first year of the course is at present in operation.

A MONUMENT to Jules Verne has been unveiled by M. Jules Claretie at Amiens. An honoured place among educators must be given to one who stimulated in so many of us an interest in regions unexplored, and we may remind ourselves of the debt which England, as well as France, owes to the author of "Twenty Thousand Leagues under the Sea."

FROM the quarterly report of the Leicestershire Education Committee we observe that the system of county junior and intermediate scholarships has been revised. The scholars will receive school fees, books, and travelling expenses throughout their school career. A fund has been formed to provide additional maintenance allowances where required. In order to participate in these advantages, the scholar is bound to attend at least three years at the secondary school.

IT is difficult to overestimate the importance of a good catalogue in the case of libraries relating to education. We are the more pleased to be able to praise unreservedly the recently issued catalogue of the books and pamphlets on education in the public libraries of Newcastle-upon-Tyne. The system adopted in this list might serve as a model, and we direct attention to it because many of our readers have opportunities of influencing library management on a small, if not on a large, scale. In the author list the directions for identification and precise location of the particular work are clear and accurate, while the classification of the subject list is the best we have yet seen. From either list it can be seen at a glance whether the book is in the reference, lending, or either of the branch libraries.

THE colony of Queensland is to have a university. Hitherto her students have had to go to Sydney or Melbourne, but next December the foundation-stone of the Queensland University will be laid. Queensland was the first colony of Australia to establish a school system open to all. Education is free, secular, and compulsory. In 1,300 State schools, at the close of 1907, there were enrolments of 130,000 scholars and 1,130 teachers. In the same year there were ten grammar schools. These are aided by the Government, and grants are made for university scholarships. The system of education in Queensland is under the control of the Department of Public Instruction, which is presided over by a member of the Cabinet. In 1907 there were 163 private schools, attended by about 12,000 scholars.

FIVE courts in the great Missionary Exhibition which the Church Missionary Society is organising at the Royal Agricultural Hall, Islington, from June 8th to July 3rd, will be devoted to an important and comprehensive educational exhibit. The organisers propose to illustrate on scientific lines the educational work being carried on in non-Christian lands, and this end will in some measure be attained by a display of time-tables, schedules of work, specimens of ordinary exercises, and some of the competitive work of native scholars. There will also be an array of photographs of the pupils, and maps indicating the situation of all the institutions and the races from which the pupils are drawn. Four of the courts will deal with special subjects, such as: (i) the educational ladder provided from the elementary school to the college of university standing in some of the Indian missions; (ii) the evolution of the mission school in Africa from its most primitive form in a village outstation to a well-equipped high school in Uganda; (iii) select specimens of educational institutions of various kinds in all parts of the C.M.S. field; (iv) special forms of educational work carried on among Christian students, including the training of native clergy and mission teachers.

WE have received from Prof. Hearnshaw, of the Hartley University College, Southampton, a circular appealing for funds towards the erection of some memorial in that town to the memory of the Pilgrim Fathers, who in 1620 set sail thence for the shores of New England. It has generally been forgotten that Southampton was the original point of departure from England of the *Mayflower* and *Speedwell*, the two ships of the expedition, and that their settlement in America was named New Plymouth only because Plymouth was the port from which the *Mayflower* alone, the *Speedwell* being abandoned, finally started. It is therefore fitting that Southampton, now a port of call for many of the great American liners, should have some monument to those early founders of what has become the United States of America, and we commend the matter to the attention of our readers.

THE Berlin correspondent of the *Westminster Gazette* reports that Charlottenburg has taken the initiative in appointing to its elementary schools women officials under the title of *Schulschwesters*, whose function it is specially to look after the health of the children. These "school-sisters" have no directly educational duties. It is their business to follow up cases where children are ill-fed, uncleanly, or dressed improperly; to teach backward parents; to act generally with the sanitary authorities; and to accompany children on visits to doctors when parents are unable to do so. The sisters are expected also to give special advice to parents as to the purchase of spectacles and surgical appliances.

AN attempt to sketch in its outlines the development of the city of Rome from its origin to the Gallic catastrophe was made by Prof. J. B. Carter in a paper read before the American Philosophical Society in April. His view is that the original people lived in little communities upon the hilltops, each community surrounded by a circular wall or stockade. The geological character of the Campagna and its topography produced a number of elevations admirably adapted for such settlements. All of these little hilltop towns must have been very similar in population and customs, and no one was probably a leader among them. Their consolidation into a city is assigned to the influence of an invasion by the Etruscans, who conquered these hill towns, and enclosed them, along with their intervening valleys, with one wall. Some villages remained without the wall as suburbs, to be afterwards incorporated in the city; such were the Aventine region and the Campus Martius. The city had then outgrown its original dimensions, and was no longer all within walls, which accounts for the ease with which it was captured by the Gauls in B.C. 390. With the capture of the city by the Gauls, Rome enters upon her period of inviolability for almost 800 years, and the thought suggests itself irresistibly that the reputation for inviolability thus gained may have been a large factor in preserving it inviolate. Even in its early days the city began to be "that so holy spot, this very Rome."

THE *Cambridge University Reporter* of April 21st consists of a list of lectures proposed by the boards of studies. We notice that the space allotted to the Teachers' Training Syndicate is blank for the present term.

THE May number of the *Journal of Education* contains a "U. U." essay on the influence of women in pedagogy. It is mainly an argument in favour of married house-masters in our public schools. Notwithstanding the fact that he has to meet such doughty opponents as Mr. A. C. Benson and Mr. Rudyard Kipling, the author of this chatty article makes out a good case. But it all depends on the house-mistress.

THE *School Government Chronicle* has published an abstract of the first annual report of the school medical officer for East Suffolk. It is encouraging to read that a large amount of interest and co-operation in the subsequent treatment of defects is shown by the head-teachers and managers, and there seems to be no real difficulty in obtaining treatment so long as the parents are willing and anxious to do so. Only four correspondents reported inability to obtain treatment. The report states that the disturbance of school routine caused by medical inspection was extensive, except in the largest and best organised schools. The statistics published show widespread disease of teeth, and only five children out of 4,000 use a tooth-brush effectively. The neglect to operate in cases of adenoids has serious results, and there is more irregular attendance from constantly recurring attacks of tonsilitis and bronchitis than from any other cause.

IN the reform of geographical teaching emphasis has been laid on the scientific side so much as to lead to apprehension lest the humanistic aspect of the subject should be somewhat neglected. Attention may be directed, therefore, to a scheme of work published in the *Teachers' Aid*, correlating literature, history, and geography. The first portion of the scheme appeared in the April 24th issue, and is suited to preparatory classes or the lower standards.

THE relation of modern universities to the communities among which they are established was the subject of an inaugural address at Leeds given by Prof. MacGregor at the beginning of the year. The April number of *Saint George* reproduces this presentation of the case from the point of view of the professor of social economics. The following expression of opinion will be generally accepted: "Universities in the midst of great cities should be open day and night to adult classes of men and women who want knowledge for other than examination purposes. The younger universities must be a channel through which not only scientific analysis, but the results of the public inquiry which is now constant, reach the people." In the same issue of our contemporary is an interesting reprint of one of Coleridge's lectures, delivered at the White Lion Inn, Bristol, on November 18th, 1813, the title being "A New System of Education."

MISS PENSTONE continues her suggestions for a preliminary course in civics in the *School Guardian*. Those teachers—we hope they are many—who incorporate some town study into their geography syllabus will find useful hints and historical information on the topics of roads, fairs, and markets in this series of articles.

A SYMPATHETIC review of the official account, written by Mr. Orange (Director-General of Education), of "The Progress of Education in India" between the years 1902 and 1907 has been published by the *Pioneer Mail*. The official document in its first paragraph says: "The most noteworthy fact in the recent history of English university development is the gradual abandonment of the federal university and of the university which examines but does not teach. In India, the principle of the federal university, which examines those whom it has not taught, received by the Act of 1904 a new lease of life. That Act expects the teaching to be done, as heretofore, in affiliated colleges, and the examinations to be conducted by the university; and it strengthens the tie between the university and the colleges by the institution of a system, not hitherto tried, of the inspection of affiliated colleges by the university." It appears that the new engine of inspection has been driven by a masterly (and masterful?) hand, for we read that faults in the constitution of colleges are being removed, buildings improved, and conditions of residence reformed. At the same time, the numbers and qualifications of college professors are rising, the lecture system is supplemented by more tutorial help to students, libraries and scientific appliances are more liberally supplied.

ONE of the many deep problems confronting the statesman in regard to India is that of moral education. It was perhaps inevitable that the institutions connected with the Imperial Government should be frankly secular. It is to be hoped that moral ideas can be, and will be, inculcated in a simple and effective way without further entangling rulers in a strife of jostling creeds and nationalities. At present it appears to a writer in the *Pioneer Mail* that large numbers of the educated classes are shedding their ancient systems of religion and morality without any compensating acquisition.

THE April number of *Indian Education* is a strong one, opening with a characteristic review of "Education in England" from the pen of Prof. Sadler. After discussing the reasons for the present popularity and frequency of educational investigations, Prof. Sadler deals at some length with the Poor Law Report and school attendance. In his concluding section he gives examples of the transfer of gifted teachers from New Zealand, the United States, and England, to other parts of the English-speaking world, a movement which makes for intellectual unity among the universities.

AN article on a problem which might well receive reconsideration in England at the present time is published in the *Educational Review* of Madras, viz., "the propriety of a public test at the termination of a systematic secondary course." We have not "many pupils disgusted with their Sanskrit," it is true, but the problem of semi-specialisation is none the less with us. The writer of the article, Prof. V. G. Kale, quotes extensively from our columns, and blesses the report of the Education Committee of the British Science Guild. (He calls it British Service Guild, in which he is not very far wrong.) His main conclusion is that school certificates should supersede examinations, and that schools abusing the privilege of issuing certificates should lose it. He does not make it clear what is to happen to the boys and girls in such schools, nor does he indicate the inspecting authority by whom the privilege is to be granted or withdrawn.

ONE of the difficulties of rural science teaching is to ensure that both the educational and industrial phases of nature-study shall receive due attention. We learn from the *Educational Review* of Nova Scotia and New Brunswick that an effort is being made to put teachers in a position which shall enable them to deal adequately with

both aspects of the child's outdoor experience. Nova Scotia teachers are given a summer course conducted by the united staffs of the Agricultural College and the Normal School at Truro. By obtaining the diploma to which the course leads, the teachers become qualified to earn increased grants.

DR. ELKINGTON, chief health officer of Tasmania, says that thousands of Australian children are being carefully trained to develop short sight and curvature of the spine. He is reported by the *Australian Journal of Education* to have declared that many teachers pass their lives trying to overcome physical defects by psychological formulæ.

THE *Public Instruction Gazette of New South Wales* reports the address delivered by Mr. P. Board, the Under-Secretary for Public Instruction and Director of Education, and president of the educational section of the Australasian Association for the Advancement of Science. We quote from the paragraph on training of teachers: "The growth of a science of education has made teaching a profession, and the training of the teacher an absolute necessity. . . . On this question public opinion has had to be led by those who have thought most on the subject, since the question is not one that appeals to the popular imagination. The State that waits for popular agitation on this subject is sure to be left behind; it is a question in which statesmanship consists in leadership. But in most civilised countries the question has now been determined, and normal schools and training colleges are rapidly increasing. The problem now is not whether teachers should be trained, but how they should be trained." Mr. Board pleads earnestly for the extension of science teaching in the higher schools; "it is for the schools to create a public that can appreciate scientific work."

AT the same congress, at Brisbane, Mr. R. H. Roe read a paper on the new geometry, deploring the chaos that has followed the deposition of Euclid, and calling upon Cambridge to introduce a new authorised version of the fundamental geometrical scriptures.

SCOTTISH.

THE Education Department, in pursuance of its policy of explaining the intention and scope of the various sections of the Education (Scotland) Act, has just issued two circulars, one dealing with the clauses bearing on the provision and maintenance of schools for higher education, and the other with medical inspection. The Department considers that, so far as number is concerned, the provision of centres of higher education is now fairly complete. No increase in the number of centres will in future be made until the local authorities have had the fullest opportunity of expressing their views on the matter. Further, of the centres already recognised, there are some which have yet to make good their claim to permanent recognition, and the Department will be prepared to consider any representation from local authorities as to the advisability of discontinuing any particular centre. The circular rightly emphasises the necessity of establishing a proper relation between the central schools and those which may be regarded as its "feeders." By means of conferences between teachers, inspectors, and managers, it is suggested that a clear understanding should be arrived at in regard to the curriculum and methods best adapted for all the schools throughout the district served by the central school. Immense educational waste has occurred in the past through lack of any co-ordination between the various types of schools, and, indeed, between schools of the same type. Absolute uniformity is not required, but anything would be preferable to the "go-as-you-please" system at present in vogue.

THE circular next considers what steps are necessary in order to secure that opportunities for education at these centres may be brought within the reach of every qualified pupil in the district. General approval will be given to the principle laid down in this connection, viz., that the mere accident of residence in an out-of-the-way part of the district is not to be a bar to such pupils receiving the same opportunity for higher instruction as their more fortunately situated fellows. A properly co-ordinated bursary system will go far to secure such equality of opportunity. The general principles upon which such a bursary scheme should be framed are then laid down as follows: (i) more and larger bursaries should go to children in rural schools; (ii) there should be no general competitive examination for such bursaries; (iii) in the larger centres of population, where the secondary schools are within easy reach of all pupils, bursaries and maintenance allowances should be correspondingly small; (iv) liberal maintenance grants should be provided for pupils whose attendance at centres necessitates staying away from home.

THE Department's circular on the medical inspection of schools is an admirable document, explaining clearly and fully the policy to be followed by the Department on one hand, and by school boards and county committees on the other. The Act places the duty of setting up a system of medical inspection, in the first place, upon the school boards, but should they neglect to do so "it will be the plain duty of the Department to avail themselves of the compulsory powers conferred by Section 4 of the Act." A strong point is made in the circular of working in close co-operation with the public health authorities with the view of preventing overlapping and of securing efficiency, and it is suggested that the county medical officer should have general oversight of the arrangements. While there are many advantages in such a course, it is to be feared that these officers have already as much work as they can tackle with advantage. The work of medical inspection over a wide area is sufficiently onerous to demand a man's whole time. To appoint the county medical officer would be merely to give lip-service to co-ordination and co-operation of effort. It is further clearly indicated that only in exceptional circumstances will ordinary medical practitioners be allowed to join the medical inspection of schools to their other duties.

GLASGOW UNIVERSITY COURT has sent to the Senate for its consideration the recommendation of the council that distinguished graduates who wish to teach classes in the University qualifying for graduation should, when the court is satisfied of their ability and fitness, be appointed lecturers in the University, and should be granted class-room accommodation as far as possible. It is rather unfortunate that the court has sent down the council's recommendation *simpliciter* without giving any indication of its own views. The Senate is essentially a close corporation, and cannot be expected to welcome open competition from distinguished outsiders. It is not expected that the verdict will be in favour of the proposal, which, in some form or other, is urgently required in Scottish universities.

THERE is grave danger that Scotland in the immediate future will be confronted with an overplus of trained teachers such as now exists in England. Fortunately, however, the Education Department is alive to the danger, and has resolved to put a limit upon the number of

students to be admitted to training. In a circular letter to the provincial committees, the Department states that from careful investigations that have been made it has been estimated that an output of 1,200 trained teachers annually is required to make up the wastage in school staffs. It is therefore proposed that no more than this number be admitted to training in any one year. It is further stated that steps will at once be taken to limit the number of junior students in training as far as possible to the number of places which can be provided at the training-college centres. Certainly this restriction has not been decided upon a day too soon. There are at present 1,644 junior students in training in the first year. This represents an overplus of nearly 40 per cent. upon the vacancies in training colleges. In addition, it has to be remembered that the junior studentship is not the only avenue into the profession, and when these others are taken into account it is safe to say that three years hence almost 50 per cent. of the applicants will be unable to find admission. This is a satisfactory tribute to the popularity of the teaching profession, but one fraught with grave possibilities for its members.

MR. JAMES COATS, of Paisley, well known for his philanthropic and educational work in the highlands and isles of Scotland, has just presented to each school in those districts a copy of Chambers's "Encyclopædia," in ten volumes, in a special cabinet. Wisely enough, he stipulates that ample facilities should be given for consulting the works, which are intended for use and not for show. Mr. Coats has also intimated his desire to present to each boy in those schools a knapsack school-bag, and a satchel-bag to each girl. Mr. Coats's thoughtfulness, however, does not stop at the children. He intends to present each teacher in those schools with gifts, which are to take the form of Gladstone or kit-bags, travelling rugs, fountain pens, gloves, belts, &c., according as the teachers select. Teachers have gladly and enthusiastically seconded Mr. Coats's efforts to bring "sweetness and light" into the solitary places, and have willingly acted as custodiers and librarians of the Coats libraries in each district. The gifts now announced represent the benefactor's acknowledgment of their services.

DR. J. R. LESLIE, principal of the Episcopal Training College, Edinburgh, recently received the honorary degree of Doctor of Divinity from Aberdeen University, and his past and present students resolved to take advantage of the occasion to show their respect and esteem for their revered chief. On May 8th the old building in Orwell Place, which has been both college and home to many generations of students, was filled to overflowing with old students who were anxious to do honour to the guide and friend of their youth. Many handsome gifts were presented to Dr. Leslie and his wife, and touching tributes were paid to their whole-hearted interest in each and all of their students.

IRISH.

THE Classical Association of Ireland has issued its volume of proceedings for 1908. This contains an account of the initiation of the association, with a full report of the inaugural meeting containing verbatim the opening address of the first president, Mr. Butcher, M.P. A good deal of work has been done by the association during its first year by advisory committees in Dublin and Belfast working together, which have presented an interim report on the teaching of classics in schools, outlining the directions in which reforms may be urged. There is also a report of the conversazione given to the British Association, with a reproduction of the new Roman bronze inscription of 89 B.C., a facsimile copy of which was presented to the Classical Association by Commendatore Boni.

THE Classical Association also announces that an educational conference will be held in Dublin on June 18th and 19th. On the evening of June 18th there will be a discussion on the place of classics generally in education, in which leading educationists, not necessarily teachers of classics, will take part. On the morning of the 19th there will be discussions on set courses in classics, the place of archæology in schools, and a uniform pronunciation of Latin. In the afternoon the president of the association, Mr. Justice Madden, will give a garden-party, and in the evening there will be a conversazione, at which Prof. Waldstein will lecture on Herculaneum.

THE University Commissions under the new Act are making rapid progress with their work. The Dublin Commission has prepared a final draft of the first statute for the general government of the National University of Ireland, and has received deputations from the governing bodies of University College, Dublin, and University College, Galway, to present certain resolutions in reference to the statutes of their respective colleges. It has also conferred with Dr. Delany, Mrs. J. R. Green, and Prof. Kuno Meyer, representing the trustees of the Irish School of Learning, as to the provision for higher Irish studies in the University and its constituent colleges.

THE Belfast Commissioners have received a deputation from the Library and Technical Instruction Committee of the Belfast Corporation in reference to the co-ordination between the University and Municipal Technical Institute. They also propose to make appointments to the following additional fellowships: modern history, economics, French and Romance philology, and botany; and also to the following additional lectureships or readerships: archæology and ancient history, English language, Celtic languages and literature, logic and scholastic philosophy, physics, geology, organic chemistry, and bio-chemistry.

THERE has been some discussion during the month on two other aspects of the university question, viz., the provision of residential colleges for students in connection with the new universities and the relation of Magee College, Londonderry, to the changed conditions of university education in Ireland.

THE Department has published vol. ix., no. 3, of its *Journal*, with an interesting record of the work it is doing to foster Irish technical instruction. For those concerned in afforestation there is an account of the Danish Heath Society, and there are also valuable hints on various branches of Irish trade, and an official report of the Technical School Conference held last February between officers of the Department and representatives of the technical instruction committees having schools working under the Department's regulations. The principal points dealt with were the syllabuses of instruction, the constitution of courses of study, and courses of study for women students.

WELSH.

ONE of the questions which have become urgent in Wales is that of training colleges for primary-school teachers. It appears that negotiations between the counties of Glamorgan and Monmouth have proceeded so far that some hesitation is felt as to the practicability of recon-

sideration of the agreement for colleges to be erected at Barry and Caerleon respectively. A conference has been held between Welsh Members of Parliament and the representatives of Glamorgan and Monmouthshire, at which it was decided (i) to petition the President of the Board of Education to have the powers of the Board over the training of teachers in Wales transferred to the Welsh Department of the Board of Education, and (ii) that the suggestions of Principal Griffiths, of Cardiff, for a scheme for the training of teachers in Glamorganshire and Monmouthshire be submitted to a conference representative of the education authorities of those counties and the University College of South Wales and Monmouthshire, and that a report of this conference be prepared.

THE especial point in question is the situation of the new training colleges. Should training colleges in Wales be placed in direct and organic connection with the university colleges to the extent of being in the same towns? It is felt by some that independent location will deprive students of the university atmosphere, even if such students do not actually go through complete or even partial university courses. At Bangor, the Normal College is likely in the future to become more closely associated with the University College at Bangor. The Bangor Normal College has now been taken over by the combined county councils of Flintshire, Denbighshire, Carnarvonshire, and Anglesey, and the numbers are to be increased up to 200 students. It is evident that some of the better students ought to be able to be drafted into some of the university classes, whilst the Normal College can offer university students in training the benefit of special professional courses in kindergarten methods, domestic science and housecraft, manual work, and rural economy.

AT the recent meeting of the Court of the University of Wales, a memorial was received from the council of the Society of Art-masters suggesting that drawing should be added to the list of subjects prescribed for the matriculation examination of the University of Wales. There can be no doubt that drawing has not received the amount of attention which it deserves in Wales, and in schools and colleges it is not likely to be honoured greatly when no academic recognition is accorded to it. The Senior Deputy Chancellor of the University suggested that the matter be referred to the Senate, with the recommendation that the subject was one "of importance."

THE Llangollen County Schools were built under the old regulations of the Board of Education, whereby a space of 10 square feet was allowed for each pupil. As built, the school accommodated seventy pupils. As there are now 126 pupils in the school, evidently the accommodation is most seriously inadequate. It is proposed to take the opportunity of augmenting largely the provision for science and technical instruction. The governors propose to offer facilities for three days a week to the elementary schools, so that the boys and girls in the upper classes of those schools may have certain subjects taught them, which at present it is found impracticable to attempt. Arrangements of this sort, if efficiently carried out, will do much to impress the public mind with the sense of organic unity and continuity of elementary and secondary education.

THE University of Wales has received a report from a committee appointed to consider the establishment of special courses of study on the plan of the diploma courses in economics and other subjects arranged in the University of Oxford. The diploma in economics of that University has been found of great value as a training for a business career. It is open to students who have not graduated. The committee recommended that schemes of study be devised in economics, history, and literature, with the view of granting diplomas in those subjects. Under such a scheme, it was pointed out, evening courses could be established, so that the working classes might have the opportunity of pursuing studies of value academically as well as for their avocations.

THE new elementary school at Talbot Village, near Llantrisant, has benefited by a grant of £1,250 (out of a total cost of £3,375) from the £100,000 fund for the erection of new council schools in "single-school areas." Mr. Runciman, at the opening ceremony, stated that this was the first school opened of its kind. He reminded his audience that in Scotland for hundreds of years education was conducted in the rural schools on the policy of sending the best teachers that could be provided to those schools, with the result that, for the last hundred years or two, some of the most learned pupils sent to the universities had been trained in village schools.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Methuen's Simplified German Texts: Brentano, Der Müller am Rhein. Adapted by Florence Ryan. viii+72 pp. *Chamisso, Die Geschichte von Peter Schlemihl.* Adapted by R. C. Perry. viii+91 pp. *Fouqué, Undine und Huldbrand.* Adapted by T. R. N. Crofts. viii+72 pp. (Methuen.) 1s. each.—The series of Simplified French Texts having been well received, Mr. Crofts, the general editor, has started a German series on the same lines; that is to say, there is a brief introduction with some account of the author, and the notes are incorporated in the vocabularies (which we have tested and found complete). The first volume is based on "Das Märchen von dem Rhein und dem Müller Radlauf," a fairy-tale quite typical of its wayward author. The introduction, strangely enough, contains no reference to the usual legend of the Mäuseturm at Bingen, nor to the Pied Piper. The proof of this book has not been well read; there are six misprints and four slips in the punctuation on pp. 2–4. German usage with regard to *s* and *ss* seems to have given the printers particular trouble. "Peter Schlemihl" has been successfully abridged; but here, also, misprints are too common. Who is the *de la Motte* del-*Fouqué* mentioned in the introduction? Mr. Crofts has adapted "Undine" himself, and has done it skilfully; but we are again surprised to find the German rules of punctuation so frequently neglected. Thus, on p. 5 no fewer than five commas have been omitted.

Otto Ernst, Master Flachsmann. Translated by H. M Beatty. 155 pp. (Fisher Unwin.) 3s. 6d. net.—"Flachsmann als Erzieher," a comedy of schoolmastering, is now in its twenty-fifth thousand; it was first published in 1902. This fact alone suggests that it was worth translating. To English teachers it perhaps offers less than to the German; but apart from its value as a piece of *Kulturgeschichte*, it is an excellent play, and gives food for much thought. We, too, have something akin to Flachsmann, the incompetent despot who figures as the head of a country school; and heaven be thanked that we also have our Flemmings, heaven-sent teachers, inspiring and enthusiastic. As for the translation, it cannot be regarded as very good. For *das Schulgeld erlassen* we

hardly say "to forgive the school fee," nor "sportfully" for *belustigt*, nor "gave him a right whaling" for *hat ihn gehörig durchgewalkt*. What meaning does a "minister's beard" convey to an English reader? or "then wells up from my powers the law of my creative force"? or the exclamation "Yes, now I ask a man!"? or "a lure-bird of learning"? There is a golden mean in translating between extreme adherence to the text and licence. Mr. Beatty has been too literal. Some notes on points bearing on German school life would have added materially to the value of this book.

A First Book of German Poetry. Compiled and annotated by Prof. W. Rippmann. 103 pp. (Dent.) 1*s.* 4*d.*—This volume of short poems is a praiseworthy and important addition to Dent's Modern Language Series. The 162 selections have been chosen with judgment and care from various authors, and are here conveniently arranged according to subjects. Difficulties of word and phrase are dealt with briefly and clearly in the twenty pages of notes in German placed at the end of the book.

Classics.

Latin and English Idiom: an Object Lesson from Livy's Preface. By H. D. Naylor. viii+72 pp. (Cambridge University Press.) 2*s.*—This is an odd book, which produces the impression that the writer, after studying Latin for a long time, had realised suddenly in a flash the importance of the order of words. Naturally this throws a new light on everything; and he embodies his new ideas with some other matter in an analysis of Livy's preface. It is quite possible that this is really the origin of our book; for under the current system of instruction, knowledge of Latin is nearly all taken in through the eye, which treats the Latin sentence as a kind of child's puzzle, searching up and down for the thoughts in the English order. We are confirmed in this view by the fact that Mr. Naylor seems to allow Livy a speciality in the use of orders, which is, however, equally obvious in all good Latin work; Livy's speciality is rather colour, if we may use this word in the sense of novel associations. He applies the colloquial or poetical word, the unusual turn, so as to bring in a new set of associations to familiar thoughts and acts. The author urges us to read Latin "with stress on words abnormally placed"—perfectly sound advice, but surely unnecessary if we have been in the habit of reading Latin at all with intelligent expression. We hope this book will open the eyes of many to the importance of this; if it does, Mr. Naylor will not have spent his labour in vain. He does well in urging that good English renderings are wanted, not word-for-word construing, or the formless hotchpotch that is too common in English versions, suggesting Latin idiom and not reproducing English idiom. He gives a good translation of the preface, with a detailed analysis, notes, and parallels, the English in one column, the Latin in another. He warns us against dead metaphors, needless circumlocutions, and other faults; and the tyro may learn much from him. Now and then he trips himself, as in the portentous sentence "absence of cupidity was proportioned to absence of its objects" (p. 11), or in assuming that the modern trick of "variety of vocabulary, for mere variety's sake," is desirable (p. 13). But on the whole he carries out his own precepts.

The New Latin Delectus. Book II. By W. J. Thomas and E. P. Doughty. With Vocabulary. 260 pp. (Horace Marshall.) 2*s.* 6*d.*—We have already reviewed favourably the first part of this Delectus. The second contains chiefly mythological pieces, with some extracts illustrating Shakespeare's "Coriolanus" and "Julius Caesar." No syntactical notes are given (an admirable point), but there are references to English literature and to works of art in the text. All vowels long by nature are marked. The extracts differ greatly in length, the shortest being but four or five lines; they are mostly in verse, but there is a passage simplified from Apuleius ("Cupid and Psyche"), and others from Cicero, Aulus Gellius, Livy, and Suetonius. For the rest, Ovid is mostly the source; but there are pieces from Virgil, Horace, Propertius, Catullus, Tibullus, and "Ilias Latina." The notes are excellent.

English.

A NUMBER of old friends, in new bindings, regularly come out to tempt the teacher who believes in continuous reading. Messrs. Chambers send (8*d.* each) *Tom Brown, Hereward the Wake, The Talisman*, the *Wonder Book, The Children of the New Forest, The Lances of Lynwood, The Coral Island, The Pathfinder*, and most welcome, because unexpected, *Little Women* of Miss Alcott. It is to be hoped that this last means the reprint of Miss Alcott's other famous books. The series is in blue, large, easy to hold, well printed. *Kidnapped* (1*s.* 6*d.*), with a useful introduction, comes from Messrs. Cassell. Scott's *Tales of a Grandfather* (1*s.* 4*d.*), also with an introduction, is from the Cambridge University Press. *The Last of the Mohicans, The Water Babies*, Mrs. Gatty's *Parables from Nature* (well illustrated), and *Feats on the Fiord* (1*s.* each) are from Messrs. Bell. All are tried friends. *Sindbad, The Tanglewood Tales, The Heroes*, and *The Water Babies* are issued by Messrs. Blackie at sixpence each; and to the Temple Continuous Readers (Dent), at the same price, are added *The Arabian Nights, Little Women, Tanglewood Tales*, the *Wonder Book*, and *Parables from Nature*. All these books are in cloth, and many are illustrated. Messrs. Black issue *Eric* (6*d.*) in linen wrapper, and Messrs. E. J. Arnold and Son, of Leeds, send *Westward Ho!* (1*s.*). The same publishers have put *The Snow Queen* and *Tom Brown* into their "A.L." series (4*d.*). An excellent set of short readers comes from Messrs. Chambers. They are selections from Nathaniel Hawthorne. A really beautiful selection from White's *Selborne*, with forty illustrations (1*s.*), is one of Mr. Fowler's readers for secondary schools (Macmillan); and *The Crown of Wild Olive* and Bede's *History of the Church of England* are added to Dr. Rouse's texts (Blackie). Messrs. A. and C. Black are approaching in *The Round World* (1*s.* 4*d.*) to an ideal elementary geography, but perhaps the writer, Mr. Fairgrieve, will put in a little more geographical history still when he rewrites the book; it is, however, admirable as it stands, and most suggestive. *The Oxford Reading Books* (No. 6, 1*s.* 6*d.*), and the already famous little series (4*d.* each) edited by "Q." (among the books are *Sohrab and Rustum, Childe Harold, Isabella*, and *The Ancient Mariner*), come from Mr. Frowde, who also sends the first, second, and third books of verse (4*d.* each). We must also mention *The Story of the Iliad* (Dent, 1*s.*), a very good edition of Milton's *Minor Poems* (Bell, 2*s.* 6*d.*), and Mr. Edward Arnold's *Rambles in Bookland* (1*s.* 3*d.*), the illustrations of which are from well-known pictures; a really remarkable copy of *Hetty Gray* (Lady Gilbert), 8*d.*, is published by Messrs. Blackie and Sons; *Six to Sixteen* (Mrs. Ewing), for 1*s.*, is from Messrs. Bell.

We suppose (and hope) the schools buy these books; but a caution is needed against what looks like a too opulent supply of some of them. An inquiry into the present state of secondary-school libraries and the way in which they

are kept up would be most useful. The primary-school child, with all this wealth at his door, has in most cases to wait; the bogey of the ratepayers' associations keeps his shelves empty.

Chaucer, The Clerkes Tale and The Squieres Tale. Edited by Lilian Winstanley. cxxiv+118 pp. (Cambridge University Press.) 2s. 6d.—At first sight the introduction to this edition may seem inordinately long, but it is full of good matter and we would not have it shorter. It consists of an excellent estimate of Chaucer's place in English literature, chronological tables, a survey of Chaucer's grammar and metre, and special consideration of the two tales edited. The only criticism we are inclined to make is that the notes are sometimes unnecessary; in many cases the glossary would have served the turn equally well.

History.

Our Native Land. By D. MacGillivray. 256 pp. (Blackie.) 1s. 6d. net.—"The story of Scotland from the earliest times to the Union of 1603" is here told in a pleasant, easy style, with abundance of good pictorial illustrations and poetical quotations, and is followed by a chronological summary of Scottish and English history, notes on the illustrations, and a list of historical novels and romances. But the feature which more especially distinguishes this book from others is a series of seven history time-charts, after the last page, in which, on a background coloured after the style of maps to distinguish clearly the centuries, the events of Continental, Scottish, and English history are arranged in three columns, with names of "celebrities" in narrower columns alongside, as well as the reigns of Scottish kings. This is new, at least to us, and very useful.

Told by the Northmen. By E. M. Wilmot-Buxton. xviii+246 pp. (Harrap.) 1s. 6d.—This is a collection of "stories from the Eddas and Sagas, retold by" the author in a very pleasing style, and with sixteen really beautiful illustrations. Mr. Wilmot-Buxton does not tell us the sources of these, but most, if not all, of them look like photographs of pictures or sculptures. The book is an excellent introduction to Scandinavian folk-lore, and is further improved by selections from Lowell and Longfellow's poetry. In the next edition, which we hope the book will reach, "whence" (p. 115, last line) should become "whither" and "whom" (p. 209, l. 15) should become "who."

The English Constitution, 1603–1688. By N. Powys. 24 pp. (Sherratt and Hughes.) 1s. net.—This booklet consists of notes written originally for the help of members of the National Home-Reading Union, and no doubt they were exceedingly useful to those engaged in a course of reading under those auspices. They are now reprinted for "students for the history school and for history teachers," but though teachers may gather some hints from the perusal, they are too fragmentary, too allusive, and too uneven to be of much service for the ordinary student. Some of them are quite elementary, others are concerned with technical details, and the whole is written from the point of view that our modern constitution was practically settled at the Revolution of 1688, a theory which ignores the changes of the eighteenth and nineteenth centuries.

Claud the Archer. By H. Strang and J. Asher. 158 pp. (Frowde and Hodder and Stoughton.) 1s.—A capital story of the reign of Henry V., weaving together the events of the war in France and of a feud between two families in England, which illustrates the social manners of the time. How Claud Thynne, the representative of an old English family, is ousted from his lands by Delarche the Provençal, partly by financial pressure and partly by accusations of favouring Oldcastle and his "heretical" friends, and how he recovers his position by serving in the war, is a story which will not only interest boys and girls, but teach them history.

Geography.

The Class Room Atlas of Physical, Political, Biblical, and Classical Geography. Third edition, revised. Edited by E. F. Elton. Forty-eight plates. (W. and A. K. Johnston.) 5s.—This is a good atlas, well printed, cleanly coloured, and up-to-date. Except the classical plates, to which we shall refer again, its chief feature is clearness, obtained by omitting all but the necessary names, which is just what is required in an atlas the main object of which is teaching rather than reference. Most of the maps are coloured orographically—in browns and blues—which is as it should be, if the political geography is to be properly studied. The "commercial" map of the British Isles is an instance to the point. It is laid down, so to say, on the top of a physical map, and is not disfigured by the sprinkling about of the usual absurd labels |pigs|, |eggs|, |tin|, &c. One can soon impress the class with "cause and consequence" on such a basis. The series of climatic charts which preface the work are excellent, especially the three Mollweides of the world's annual rainfall, distribution of vegetation, and structural divisions. We are glad to see the Gulf Stream *broken*, but all the same should have liked to see it disappear nearer Newfoundland, or at any rate before it reached so far east as lat. 35° W. All countries outside Europe have an inset of the United Kingdom, or part of it, on the same scale for comparison Many railways are indicated and brought up to date, though there is an inexplicable omission in modern Greece, where not a single line is shown—and yet Athens and the Morea are at last within sight of linking up with the rest of the European systems. The index of place-names is arranged in letters and numbers instead of in what we think is far preferable—the orthodox degrees of latitude and longitude. As to the classical maps, Mr. Elton says the contour system of showing the mountains is impracticable, and the method of hachuring has been employed instead. What a pity! It has always been the fault of the so-called classical geography that it has muddled through its work regardless of physical geography, and has presented its maps as mere name-repositories. We are sorry that one so capable as Mr. Elton is of breaking this nefarious custom has thought fit to continue it.

The "A.L." Pupil's Atlas of Physical and Political Geography. Forty-two plates. (Leeds: E. J. Arnold.) 1s. 3d.—The "A.L." pupil gets a lot here for his (or her) money. In addition to the forty-two plates there are three pages of statistics, notes on projections and scales, and a good index. The maps are highly, not to say crudely, coloured, and are very effective, though occasionally weakened by defective register. Insets of the British Isles are included in most maps. Some defects we have noticed are the inclusion only of *mean annuals* (temperature and rainfall), which naturally make such items as drought and famine in India appear impossible, and the weakness of some of the non-physical maps. In any future edition the plate entitled "British Isles (Railways)" should be "scrapped": it is nothing but a network of confusion. And surely the "reader" ought never to have passed such

a tell-tale word as "Hedschas Bahn" (which, by the way, is only shown so far as Tebuk), especially when he has changed the really German line further north into the "Baghdad Railway" pure and simple. But when all is said and done, we once more fearlessly assert that the "A.L." pupil gets a lot for his money.

Mathematics.

Practical Solid Geometry. By Rev. P. W. Unwin. xii+267+ (Answers) iv pp. (Bell.) 4*s.* 6*d.*—We are very glad to find a book on practical solid geometry drawn up for the use of the "general student," and we hope that the day is not far distant when every secondary school will provide for the inclusion in its curriculum of a course of descriptive geometry in which the practical rather than the theoretical side of the subject is developed. This volume forms an elementary course, covering Stage I. of the Board of Education Examination, and seems to us to be an excellent treatment of the subject. We are glad to notice that a free use of models is recommended; if the pupils sketch the models and take measurements from them their progress is much more rapid, and their knowledge more thorough, than without such aids.

Five-figure Logarithmic and other Tables. By Frank Castle. ii+58 pp. (Macmillan.) 1*s.*—A very cheap and good collection of tables, printed in easily read type on a broad page that prevents overcrowding. The collection includes tables of logarithms of numbers and anti-logarithms, the six trigonometric ratios and their logarithms, radians (degrees to radians and radians to degrees), chords of angles, hyperbolic logarithms, exponential and hyperbolic functions, areas of circles (diameters advancing by eighths and also by tenths), reciprocals, squares, cubes, square roots and cube roots. A table of useful formulæ in the differential and integral calculus, and another of "useful data," are also included. It is a pity that space could not be found for a table of cube roots of numbers from 100 to 1,000; also it would be of advantage to have the hyperbolic logarithms of a few powers of 10 at the foot of the pages containing the hyperbolic logarithms.

Exercises in Algebra. By R. Nettell and H. G. W. Hughes-Games. vii+230+ (Answers) 79 pp. (Longmans.) 5*s.* 6*d.*, or, without Answers, 4*s.* 6*d.*—A very good collection of examples, ranging from the simplest substitutions to arithmetical and geometrical progressions. The sets on "Formulæ" and those on graphs seem to be particularly good.

Science and Technology.

(i) *The Willis System of Apparatus for illustrating Lectures in Applied Mechanics.*

(ii) *Catalogue of Models for Teaching Machine Construction and Drawing, Pattern Making and Foundry Practice, Building Construction, and Mining.*

(iii) *Electric Resistance Furnaces. Quartz Glass Mercury Lamps, Quartz and Glass Platinum Resistance Thermometers.* (J. J. Griffin and Sons.)

(i) The idea of devising a system of elements, from which might be built up an unlimited series of contrivances for demonstrating problems in mechanics, was elaborated by Prof. Willis, and described by him in 1851. This method was adopted in Sir Robert Ball's "Experimental Mechanics"; and all the experiments in this book can be carried out by means of apparatus built up from elements included in the above list. The apparatus so constructed is sufficiently large for use in the lecture theatre, and the students have the advantage of seeing pieces of mechanism put together step by step. A primary equipment is catalogued at £28, approximately.

(ii) This list contains chiefly the items of apparatus and models hitherto familiar to many teachers as "Rigg's Technical Education Appliances." The second section comprises all that is necessary to equip a small foundry, such as might be attached to the workshops of engineering colleges.

(iii) The electric resistance furnaces described are constructed on the Heraeus system, in which the heating body consists of a porcelain tube around which is coiled a ribbon of very thin platinum. In the smallest tube a temperature of 1400° C. is easily reached. The quartz glass mercury lamp is an improved form of that introduced by Heraeus in 1904, and it is the richest available source for actinic rays of short wave-length. The consumption of power, on a 220-volt supply, is equivalent to 0·244 watt per candle-power. The resistance thermometers consist of platinum wire embedded within quartz. The advantages are: (*a*) the wire is protected completely from the injurious effects of gases and from mechanical strain, and (*b*) the instrument is capable of standing the most abrupt changes of temperature.

Circular No. 50, issued by Messrs. A. Gallenkamp and Co., Ltd., is of special interest to curators of museums and to teachers of the biological sciences. Besides giving particulars of show-cases, aquaria, specimen-boxes and jars, &c., the circular contains an illustrated list of Smedley's biological models. Such models are familiar and popular objects in our best museums, and the prices here quoted suggest that many of them might find places in the teaching collections of schools of quite modest resources. The models in the present list comprise Palæozoic seeds, cones and fern pinnules, algæ, fungi, mosses and liverworts, *Pinus*, flowers, stamens, germination of seeds, insectivorous plants, and various invertebrate animals. Many of them represent organisms which are themselves too small to be examined without the help of a microscope. The value of a good model in such cases is obvious to everyone who has experienced the beginner's difficulty of interpreting microscopic appearance. A large number of the models listed are, further, of extinct genera so rarely found perfect that but few students can hope to examine satisfactory specimens at first hand. The Palæozoic plants illustrated appear to be well selected, and students of palæobotany will find them very valuable.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

A Practical Introduction to Indices and Logarithms.

REFERRING to my letter, bearing the above title, published in the May issue, it is interesting to notice that the method leads quite naturally and easily to the Naperian base and to the fundamental limits associated with the exponential and logarithmic functions. In the diagram of p. 199, let OP be drawn from the origin O to touch the curve at P. It is easily seen that the value of the ordinate of P is an absolute constant—approximately 2·7;

for, since the graphs of $[y=a^x]$ and $[y=b^x]$, by a mere change of scale for x, become one and the same curve, it follows that if they were drawn with the same axes and the same scale the tangents drawn from O would have their points of contact in a straight line parallel to the x axis. Denote this constant by e, and instead of taking the value of an arbitrary ordinate, such as 10, to be the base of logarithms, let e be chosen as base.

Now a conspicuous feature of every exponential curve, such as $[y=a^x]$, is the constancy of the subtangent for all positions of the point of contact. Let $\Delta x=1/n$, so that $\Delta y=y(\sqrt[n]{a}-1)$ and $\Delta y/\Delta x=ny(\sqrt[n]{a}-1)$. Hence, proceeding to the limit,

$$dy/dx=y\times \lim_{n=\infty}[n(\sqrt[n]{a}-1)].$$

Thus the subtangent is

$$\lim_{n=\infty}[1/n(\sqrt[n]{a}-1)]$$

for all positions of the point of contact, and this gives the x of the point P. Changing the x scale, as suggested, the x of P is chosen as the new unit for showing logs. to base e. Thus

$$\log_e a^x=x\times \lim_{n=\infty}[n(\sqrt[n]{a}-1)].$$

In particular, we see that

$$\left.\begin{aligned}\lim_{n=\infty}[n(\sqrt[n]{a}-1)]&=\log_e a\\ \text{and}\qquad \lim_{n=\infty}[n(\sqrt[n]{e}-1)]&=1\end{aligned}\right\}.$$

These two results may otherwise be expressed in the more familiar forms:

$$\left.\begin{aligned}\lim_{h=0}[(a^h-1)/h]&=\log_e a\\ \lim_{n=\infty}[(1+\tfrac{1}{n})^n]&=e\end{aligned}\right\}$$

At the same time we have shown that $de^x/dx=e^x$, and, as a necessary consequence, $d\log_e x/dx=1/x$.

W. J. DOBBS.

The Holiday Course at Besançon.

IN looking through an official list of foreign holiday courses, published a short while ago, I was very disappointed to see how little real information was given regarding the course at Besançon. It has been my good fortune to spend several holidays in that city, and—since last September—to correspond regularly with the president of the course. I know with what care the work of the coming session has been planned, and how the interests of English students have been kept constantly in view. Will you allow me, therefore, in the interests of any of your readers who may be going abroad this summer, to supplement the too scanty information at present at their disposal?

The course is divided, in the usual way, into two sections—the "elementary" and the "advanced." The elementary work includes grammar, dictation, composition, conversation, the study of vocabulary, phonetics, the reading and explanation of *morceaux choisis*, of La Fontaine's fables, &c. For the advanced course the authorities have adopted *en bloc* the syllabus of the London B.A. Honours degree. Lectures will be given on the history of the French drama in the seventeenth century, and the following books will be studied: Corneille's "Menteur" and "La Mort de Pompée," Racine's "Britannicus" and "Bajazet," Molière's "Misanthrope," "Fourberies de Scapin" and "Femmes Savantes," Voltaire's "Alzire," and Diderot's "Paradoxe sur le Comédien." But students other than B.A. candidates will, of course, be admitted to these lectures.

There will be also *viva voce* discussions on literary subjects, and each professor will set, once a week, a subject for written composition, and will correct and return the work sent in.

An excellent feature of this course is that when the classes become large they are split up, and the professors go over their work with each section. By this arrangement the individual student is not overlooked. Three classes are held every day; the first two are open to all, but for the third (*le cours par sections*) the students are grouped according to their attainments; the "très forts, forts, moyens, faibles, débutants," and "commençants" are taught separately, and each one—from the most advanced to the very beginner—comes in for a large share of individual attention.

The fees are exceptionally moderate—32*s.* for one month, 52*s.* for the whole course, which extends from July 1st to November 1st. The P.L.M. will grant, in some cases, a reduction of 50 per cent. on the railway fare from Paris.

An advantage that serious students will not fail to appreciate is offered by the fact that there is no resident English colony in Besançon. In the absence of compatriots, one is compelled to speak French; and it is really astonishing how meekly the organs of speech will submit to give forth French sounds when it is useless to utter any others.

The old capital of Franche-Comté is, as a town, extremely interesting. It stands where it stood 2,000 years ago, when it was the capital of the Sequani; and it still tells by its monuments and its streets the history of long Roman and Spanish occupations. The surrounding country is very beautiful; but I shall not attempt to add anything to what Julius Caesar, Ch. Nodier, Wolf, Ruskin, Taine, and others have already said about it.

I hope that I may be pardoned if my anxiety to make known to my fellow-students of French a delightful land and a thoroughly good holiday course has led me to make too great a demand on your space—but "c'est de l'abondance du cœur que la bouche parle."

Welling, Kent. OSMOND T. ROBERT.

The School World.

A Monthly Magazine of Educational Work and Progress.

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THE CONSTRUCTION AND READING OF WEATHER MAPS.

By E. GOLD, M.A., F.R.Met.Soc.

I.

METEOROLOGICAL observations are collected and published mainly for the following purposes:

(1) To give to the general public the opportunity of knowing quickly and accurately the weather prevailing in different parts of the world. At times this knowledge is of immense business importance, as in the case of frosts affecting the wheat and cotton crops in America.

(2) To make it possible to forecast the weather for an ensuing period and to issue warnings of storms and floods.

(3) To supply the material for the study of the atmosphere, whether from purely scientific interest or with a practical end in view.

(4) To furnish results for rainfall, sunshine, wind, temperature, and humidity in a form in which they can be used in practical life by agriculturists, sailors, and others.

Now it is frequently difficult to see what is the appropriate meaning of a table of values, and what is the distribution and relation of the meteorological elements indicated by it. Consequently, very early in the history of the science, meteorologists adopted the plan of representing the distribution on maps. One of the earliest is a famous chart by the astronomer Halley, published in the Transactions of the Royal Society in 1686. It is a graphical representation of the distribution of the trade winds, and he says, in introducing it: "To help the Conception of the Reader in a Matter of so much Difficulty, I believed it necessary to adjoyn a Scheme, showing at one View all the various Tracts and Courses of these Winds: whereby 'tis possible the Thing may be better understood, than by any verbal Description whatsoever."

Weather maps may be roughly divided into (i) synchronous maps, giving the distribution of meteorological elements at a specified instant; (ii) mean value maps, giving the distribution of the mean values of the elements for any convenient period, usually the month or the year.

The synchronous maps are chiefly of use in forecasting the weather and in tracing progressive changes with a view to statistical or dynamical research. The mean value maps are of more importance geologically and geographically and for hygienic purposes. We shall be mainly concerned with the former.

CONSTRUCTION OF SYNCHRONOUS MAPS.

In the first place, the instruments must be trustworthy. British telegraphic reporting stations are all supplied with two barometers, an outfit of thermometers, and a rain-gauge. Most stations have sunshine recorders and barographs for continuously recording the pressure, while some have recording thermometers, rain-gauges, and anemometers.

The barometers are made with a fixed cistern, so that the observer has to set the vernier only before reading the instrument. They are all compared with a standard barometer at Kew Observatory before they are issued to the stations; and every year an inspector from the Meteorological Office compares the instrument with a similar barometer, which is itself compared with a standard before and after the inspection. The attached thermometer has its bulb inside the brass case of the barometer, and as this is hung in a room in which the temperature varies as little as possible, the thermometer gives pretty accurately the temperature of the mercury in the barometer. The observer reads to 0·001 in., and applies the corrections to the same order of accuracy, although the final result is reported to 0·01 in. only. The barograph is used for showing any unusual changes in pressure and the direction in which the pressure is changing at the time of observation.

Next to pressure, the most important element for daily forecasts is wind. The measurement of wind velocity is one of the most difficult to make with accuracy, and much ingenuity has been shown in devising instruments to furnish a fair approximation to its value. The most trustworthy of these and the one now adopted as a standard is the Robinson cup anemometer, having four hemispherical cups 9 in. in diameter, with their centres 2 ft. from a vertical axis about which

they rotate. The distance moved by a cup in an hour multiplied by 2·2 is equal to the mean wind velocity for the hour.

The exposure is as important as the instrument. The meteorologist wants to know the general flow of the air, and it is very difficult to get this. In Vienna, for example, there are two similar Robinson anemometers in different positions on the top of a high tower standing on elevated ground, and at times the records from the two instruments differ considerably: the building itself, as a little thought shows, influences the wind near it. The best exposure would probably be on a framework tower in an open plain or on a ship at sea. In fact, the winds at sea are undoubtedly the best for showing the nature of the general circulation.

Anemometers are expensive and suitable exposures difficult to find, so that many stations are without them. The observer estimates the force of the wind according to a scale introduced by Admiral Beaufort in 1805. It has been recently revised, and the estimates compared with instrumental records, and the following specification is now issued:

An intelligent observer who attends to this specification will rarely be more than one point in error in his estimate.

Wind direction is difficult to estimate owing to its oscillatory nature, but it is important to know this as accurately as possible; for a change in wind direction is at times the earliest indication of an approaching cyclone, and the relation of the wind direction to the pressure distribution is proving useful in foretelling the changes in the latter. The drift of smoke gives a fairly good idea of the direction, provided care is taken to avoid errors of perspective.

The thermometers are tested at Kew before issue and are compared with a standard at each annual inspection. A full outfit consists of two mercury thermometers, used as wet and dry bulbs, and of a mercury maximum and spirit minimum thermometer. They are exposed in a double-louvred screen to protect them from radiation and at the same time to allow good ventilation.

Observations are made at 7 a.m., 1 p.m., and 6 p.m.; formerly they were made at 8 a.m., 2 p.m., and 6 p.m. The change of the morning

The Force of the Wind.

Beaufort number	Description of wind	Mode of estimating on sailing vessels	For coast use based on comparisons with instrumental records	For use on land based on observations made at inland stations	Pressure P in lb. per square foot	Velocity V in miles per hour
0	—	—	Calm	Calm, smoke rises vertically	0	0
1	Light breeze	Sufficient wind for working ship	Fishing smack just has steerage way	Direction of wind shown by smoke drift but not by wind-vanes	0·01	2
2	,,	,,	Wind fills the sails of smacks, which then move at 1—2 miles per hour	Wind felt on face, leaves rustle, ordinary vanes moved by wind	0·08	5
3	,,	,,	Smacks begin to careen and travel about 3—4 miles per hour	Leaves and small twigs in constant motion, wind extends light flag	0·28	10
4	Moderate breeze	Forces most advantageous for sailing with leading wind and all sail drawing	Good working breeze. Smacks carry all canvas with good list	Raises dust and loose paper; small branches are moved	0·67	15
5	,,	,,	Smacks shorten sail	Small trees in leaf begin to sway, wavelets form on inland waters	1·31	21
6	Strong wind	Reduction of sail necessary with leading wind	Smacks have double reef in main sail. Care required when fishing	Large branches in motion; whistling heard in telegraph wires; umbrellas used with difficulty	2·3	27
7	,,	,,	Smacks remain in harbour and those at sea lie to	Whole trees in motion; inconvenience felt when walking against the wind	3·6	35
8	Gale Forces	Considerable reduction of sail necessary even with wind quartering	All smacks make for harbour if near	Breaks twigs off trees, generally impedes progress	5·4	42
9	,,	,,	—	Slight structural damage occurs (chimney pots and slates removed)	7·7	50
10	Storm Forces	Close reefed sail running, or hove to under storm sail	—	Seldom experienced inland; trees uprooted, considerable structural damage occurs	10·5	59
11	,,	,,	—	Very rarely experienced; accompanied by widespread damage	14·0	68
12	Hurricane	No sail can stand even when running	—	—	above 17·0	above 75

hour was made in July, 1907, so that the observations should be made at the same instant as those on the Continent, which are for the most part taken at 8 a.m. mid-European time, *i.e.*, 7 a.m. Greenwich time. The morning forecasts appear in the evening papers and in the daily weather report; the evening forecasts appear in the morning papers of the following day; the midday observations are used as auxiliary to the evening chart and for harvest forecasts.

In the morning the observer reads the barometer and its attached thermometer two or three minutes before the hour, and enters the readings in a rough note-book. He then goes to the thermometer screen and reads the thermometers

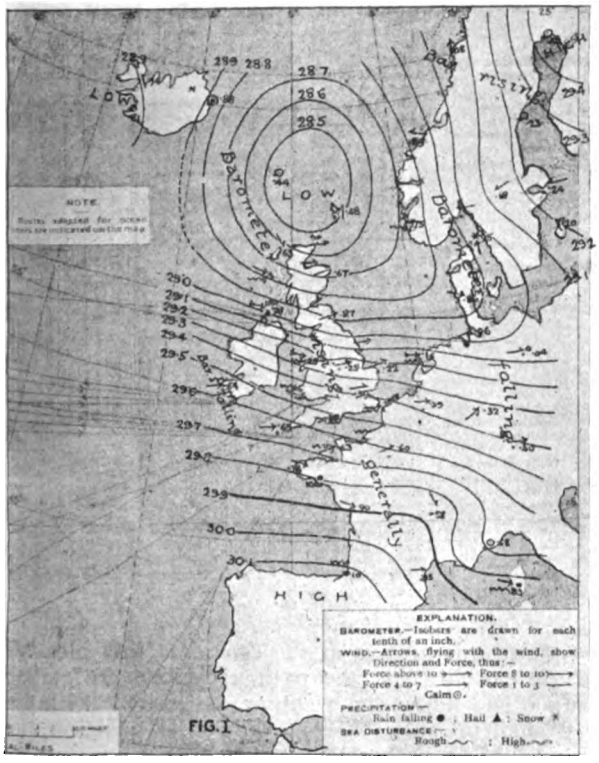

FIG. I

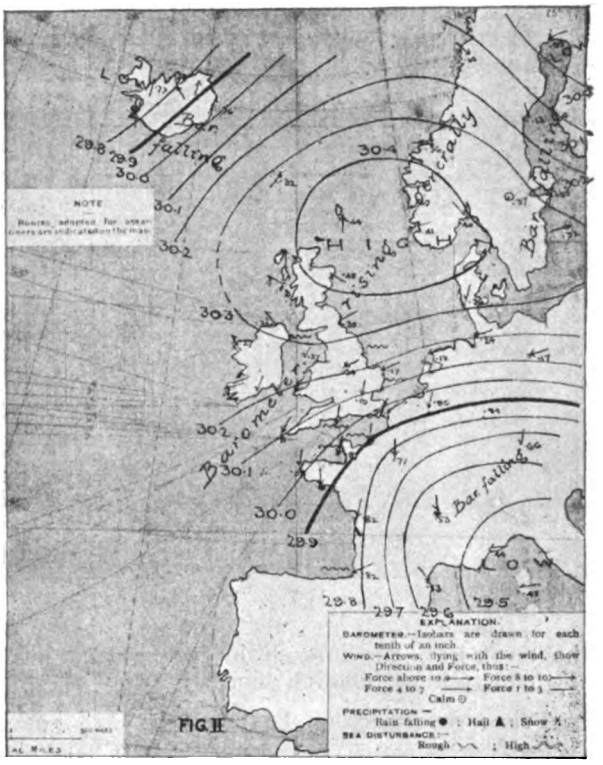

FIG. II

as quickly as possible, first the wet and dry bulbs, and then the maximum and minimum. After this he measures the rain that has fallen, observes the force and direction of the wind and the state of the sky. If the station is on the coast, he observes also the state of the sea, and makes a special note if there is any swell, because this appears in some cases to be in advance of the disturbance which causes it. (Sea calm is "0" and "tremendous" is "9." The latter probably corresponds to waves about 40 ft. high in the open ocean.) Having made his observations, the observer corrects his readings, and translates them into a telegraphic code, by means of which they are expressed in four or five words, consisting of groups of five figures each.

As these observations are received at the Meteorological Office in London, they are read off by the telegraphist and entered on a sheet opposite the name of the station to which they refer. Simultaneously they are plotted on a large chart called a "working chart." On this the map is drawn from which the forecasts are made. The isobars, or lines along which the sea-level pressure is the same, are drawn for every $\frac{1}{10}$ in. of pressure and the wind indicated by arrows, the *flèches* showing the strength. The forecaster has beside him charts for the previous times of observation, and notes of the direction in which pressure in changing and of unusual phenomena such as Aurora, haloes, and coronæ.

Such, briefly, is the method by which the forecaster is supplied with working material. What information can he extract from it, and how is he guided in making his forecast? For 80 to 90 per cent. of the forecasts made in England and on the Continent the succeeding weather is such as to warrant an independent judge in pronouncing the forecast correct. Now one could gain a fairly high percentage of successes by forecasting, every morning, the same weather that had prevailed during the preceding day. But it is in just those cases where this forecast would fail that the official forecaster, with the information before him, is able to make a successful prediction, and to tell us of the changes that are coming.

It must not be supposed that a forecaster can give a few simple rules which will enable any and every body to make a good forecast. There are rules which hold good generally, but a weather

map will rarely be of such a nature that these rules suffice for the forecast. The forecaster must know, first, all about the observations received; what peculiarities particular stations have; what possible errors there may be. He must have a sound knowledge of the weather distribution associated with different types of pressure distribution, and he must be quick to note any exceptional features; he must know the probable paths that any depressions, existing in the region covered by the map, will take; he must be alive to the possibility of the development of secondaries, and ready to note the slightest tendency in this direction; he must be able to judge whether an approaching disturbance is likely to be of gale intensity or not, and what parts of the country will be affected by it; he must keep in touch with the developments of research, and exercise his ingenuity in making them of practical application to his own country; and finally, he must keep his interest in meteorology alive by undertaking research himself.

Fig. 1 shows a cyclone which on January 14th had its centre North of Scotland. Fig. 2 shows an anticyclone which occupied almost exactly the same position a month later, on February 12th, 1909. The commonest form of the isobars in a cyclone is elliptical, and frequently the long axis is in the direction of the motion of the cyclone. But it must be clearly understood that the isobars do not form accurate ellipses or circles, and the irregularities are undoubtedly of considerable importance in their effect on the development and motion of the system. The centre of a cyclone, where the pressure is lowest, moves over the earth's surface along a curved path; generally the curvature is so small for cyclones passing near these islands that they may be regarded as moving in straight lines, *i.e.*, along great circles. The terms front, rear, right, left, and velocity of a cyclone may be taken as referring to a person who runs along so that he is always at the centre. Now clearly, if we can forecast the path a cyclone will take, and if we know the weather associated with it, we shall be able, once we know its position, to foretell the weather in a considerable number of cases when it is variable. For on the average the weather is under the influence of cyclones for more than 100 days in every year.

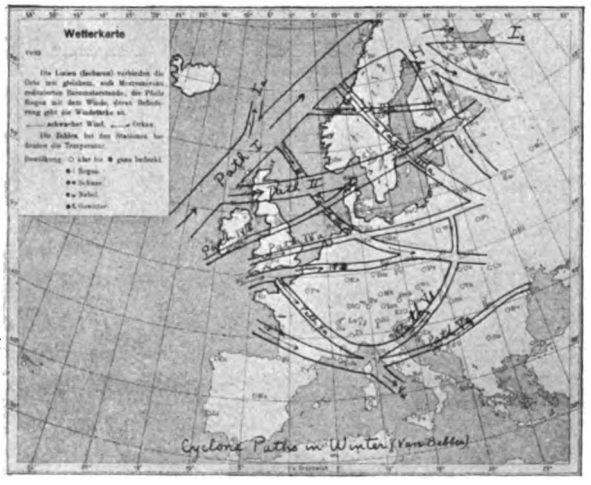

FIG. 3.

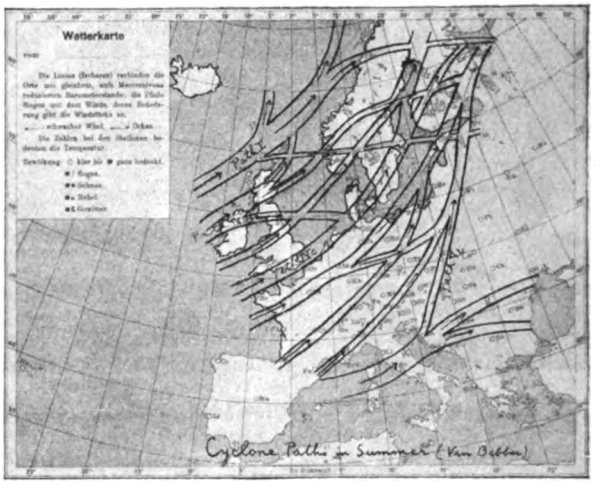

FIG. 4.

TYPES OF PRESSURE DISTRIBUTION AND THE ASSOCIATED WEATHER DISTRIBUTION.

No two weather charts for an extensive region are alike, but a brief examination of a series of charts shows that some features in the pressure distribution are always recurring and are accompanied by weather of the same general character. Most prominent are regions of low and high pressure in which the isobars form closed curves. These are called cyclones and anticyclones respectively. The term cyclone was introduced by Piddington about 1846, and was applied by him to the roughly circular storms of the Indian Ocean. It has been generally adopted, but is now used to denote the more extensive but less intense depressions of temperate latitudes, while Piddington's cyclones are frequently distinguished as "Tropical." The term anticyclone was introduced in 1863 by the famous anthropologist, Francis Galton.

The paths of cyclones have been discussed and arranged by Van Bebber, and Figs. 3, 4 show the principal paths for winter and summer. It is at once evident that in summer all the paths converge towards the Arctic regions, or the coldest place in the N. Hemisphere, while in winter many go towards Siberia, which is then the coldest parts. All the parts have a W. to E. direction, which is a consequence of the earth's rotation, combined with the general diminution in temperature from equator to pole. On certain assumptions F. M. Exner has deduced from the results of observations in the United States that weather types move generally eastwards, and that on account of the difference

of temperature between continent and ocean they would tend to recur about every five days in winter.

In the diagrams, the width of each path is approximately proportional to the number of cyclones moving along it. The following table gives the number of cyclones which moved along these paths during the fourteen years 1876–89.

Paths	I.	II.	III.	IV.	V.*a*	V.*b*	Total
Winter	46	32	23	10	15	12	138
Spring	29	11	16	11	11	21	99
Summer	37	12	3	34	1	14	101
Autumn	50	19	14	23	11	25	142
Year	162	74	56	78	38	72	480

We see from this table that, even if we know that there is a cyclone west of Ireland, we need additional information in order to know which way it will move; but if we have two sets of observations from which we can tell the direction of its motion, we can also tell with tolerable accuracy what it will do. On the whole, cyclones move so as to keep both the high pressure and the high temperature on their right. Thus paths I., II., IV. are most probable if high pressure and high temperature exist to the south or south-east, while III. is probable if there is a high pressure over the Atlantic, and if at the same time the ocean is warmer than the Continent. This explains why cyclones very rarely move along III. in summer, because then the Continent is warmer than the ocean. It will be observed that nearly all the cyclones directly affecting the weather over England move E.N.E.

The velocity with which cyclones move is very variable: an average speed for a fast travelling depression is thirty miles per hour; for a slow moving system it is fifteen miles per hour. But occasionally a cyclone remains stationary, and the pressure gradually rises, until the cyclone no longer exists.

THE EDUCATIONAL WORK OF MATTHEW ARNOLD.

By ROBERT S. WOOD,
Folds Road School, Bolton.

IT is twenty-one years since the passing of Matthew Arnold, whose personality and influence the world will not willingly let die. Some may remember how, on his death in 1888, the series of official reports, written by him from 1852 to 1882, on the inspection of schools and training colleges, were rescued from the oblivion common to Blue-book lore, and judged of such value as to deserve separate publication with an introduction by Sir Francis Sandford, who long held the reins at Whitehall as secretary to the now defunct Committee of Council on Education.

Of few of the many contemporaries of Arnold could it be said that their official utterances, wide experiences, and practical suggestions would stand the test of time and deserve to be unearthed fifty-six years after they were penned, and made to-day the basis of discussion in many lecture rooms.

But time is a fine tester of men's reputations, and it is of much interest to see, in the list of books on educational principles and practice prescribed a few months ago by the Board of Education for study by candidates for the Elementary-school Teachers' Certificate, a new edition of the collected reports on elementary schools by Matthew Arnold, issued twenty-one years ago at the request of old friends. These reports, ranging so far back as 1851, and contemporaneous with the days of small things, when the foundations were laid of what was fifty years after to become a mighty educational superstructure, have a real historic interest for the present-day student of the problem of national education.

In this new edition of the reports Arnold will speak to a new generation in his telling style, voicing opinions still bearing fruit, and reminding readers of his insight, knowledge, and high authority. Especially will Arnold's personality and influence be impressed as the student studies the more recent volume recommended by the Board, "Suggestions for the Consideration of Teachers and others concerned in the work of Public Elementary Schools," which will prove a mine of wisdom and experience applicable to all who work in the wide field of education, and references to which will be met in Arnold's reports from 1852 onwards.

It is not the fortune of many educators, even though they be school inspectors, to loom so largely and so long upon the public horizon as did Arnold. But Matthew Arnold was something more than an ordinary inspector, one whom the teacher for at least three decades after the introduction of the Lowe Code of 1862, perhaps often unfairly, regarded simply as a recorder of noughts and crosses, and an awarder or docker of grants.

In those old, unhappy days the visits of H.M. inspectors were regarded rather as visitations to be feared. But in Arnold's case, the spirit of the official demands was uppermost, and he strove to soften their rigidity. Hence his welcome—even in the years of payment by results and the individual examination of pupils—as a trusted and friendly visitor and critic, ready to help and encourage those who, while patiently awaiting the coming of a better day, strove to keep up their hearts amidst the monotonous routine generated by the Lowe decrees of 1862.

Arnold was a many-sided man, and in him the scholar and poet dominated the official attitude and impulse; hence his enduring fame and claim to the affectionate regard and grateful memory of all progressive teachers.

The student in the lecture hall making his first acquaintance with Arnold's dicta on the practical difficulties confronting the schools of fifty years ago, when national education was in its infancy, will need guidance and direction as to Arnold's life, early training, and equipment for the office which he adorned. Here the student will meet with a difficulty. Of the elder Arnold, the

standard biography by the late Dean Stanley will be available; but of the poet and school inspector, no such record of his life-work, ideals, methods, genius, and correspondence will be at hand, as Matthew Arnold desired that he should not be the subject of a biography, and his family and friends have regarded his wishes.

Fortunately, one of Arnold's colleagues has since given to the world an admirable, if short, estimate of his official career. Sir Joshua Fitch, a trusted authority in his day on educational systems and an attractive writer on pedagogy, has written "Thomas and Matthew Arnold, and their Influence on English Education." Fitch's warm appreciation of the services to the State rendered by his illustrious colleague will possess much interest for the student, and throw light upon the work of Arnold, and explain the honourable position which the Arnolds occupy in the history of public education in England. Moreover, in his estimate of Arnold as an official and an advocate of improved secondary education, the author in no way violates the request of his friend.

Many highly interesting passages in the book are culled from the "Series of Reports" prescribed for examinees in 1910, and Sir J. Fitch has hewn from this quarry of experience, facts and opinions helpful to present students, and these he has arranged in due sequence and order.

Prospective elementary-school teachers who are required to make, before 1910, a study of the Board's "Suggestions for those concerned in the work of Schools," will note how Arnold's influence as an educational pioneer is repeatedly indicated in his school reports given in the new edition of the volume issued a few months ago. Especially in the 'sixties does Arnold persistently and vigorously advocate the claims of literature as a vitalising influence in the primary school, where the demand for accuracy solely was stifling the more liberal and refining studies.

Arnold, though a loyal official, did not shrink from boldly speaking his inmost thoughts, and he strongly condemned the mischievous character of the Lowe Code in reducing school practice to one dead level of mechanical uniformity, such as could be indicated and readily assessed on a schedule of individual passes and failures, to the neglect of worthier and weightier aspects of school work. It will ever be to Arnold's credit and honour that he did so even when others of his colleagues were, in the language of officialdom, justifying or condoning in a guarded or half-hearted spirit the baneful effect of the methods of a so-called system of *payment*—not of true *education*—which left little room for the encouragement of originality and resource, as well as of wide culture, among teachers. Arnold's name will be treasured by teachers, whose work and difficulties he so well knew and appreciated.

Sketch of Arnold's Official Life, 1851–1886.

The events of Arnold's life may be summed up in a few sentences. He was born in 1822, the second child and eldest son of Dr. Arnold, the great headmaster of Rugby. In 1836 he was sent to Winchester School, and in the following year he was removed to Rugby, where he lived in his father's house. The strong educational bent of his father comes out in his eldest son's thirty-five years' work at the Education Office; in Matthew's elder sister, the wife of the late Mr. W. E. Forster, by whose efforts the famous Elementary Education Act of 1870 was passed; and in his younger brother, William D. Arnold, director of public instruction in the Punjab, who died prematurely in 1859 at Gibraltar, on his return home, invalided from India; and in Edward Arnold, a beloved clergyman, and also an inspector of schools. The late Mr. H. O. Arnold-Forster was the son of William Arnold and nephew of Matthew Arnold.

At Oxford University, at the age of twenty-one, Matthew Arnold gained some distinction by a poem on "Cromwell," which won the Newdigate prize. He obtained a fellowship at Oriel College in 1844. Among his contemporaries at Oriel were many men who later won their spurs in public life in many spheres, including Church, the Dean of St. Paul's, Frazer, the Bishop of Manchester, and Arthur Hugh Clough, Arnold's fellow-poet, friend, and fellow-Rugbeian. In 1847 Arnold became private secretary to the Marquis of Lansdowne, the then Lord President of the Council.

In 1851 Lord Lansdowne offered him an inspectorship of schools under the Privy Council, and this post Arnold held until 1886, when he retired from the public service on a pension. On several occasions he was specially employed to make inquiries into the state of education in foreign countries, thus anticipating the work of the existing Board of Special Inquiries. The value and force of Arnold's reports on secondary education are now beginning to be esteemed at their full worth by advocates of improvement. He also accepted, for two periods of five years each, the professorship of poetry at the University of Oxford. He did not long enjoy his position of freedom after his retirement, for he died suddenly on the 15th of April, 1888, a victim to an affection of the heart not unlike that which had proved fatal to his father and grandfather.

It is not surprising to find from his letters that one possessing such versatility and charm of manner, and the creative power he evinced, should not take kindly to the millstone grind associated with examining national school children in spelling, the rules of arithmetic, and plain sewing. "But that was the best the State did for the poet, the thinker, the analyst of beauty, and the subtle theorist," said the *Times* in an obituary article in 1888. But he never repined, though he saw crowds of his inferiors glorified by State and Church.

"Matthew Arnold was too sane and wholesome-minded a man, he had too much of the saving health of a sense of humour, to repine at what he could not help; but that is not the same as saying that he did not *feel* how much of his work was

lost labour." Some of his admirers used to describe his work as "cutting blocks with a razor."

He speaks constantly of his official work in terms which show that it was distasteful to him, and that he regarded it as drudgery; *e.g.*—

It is a long, tedious business hearing the students give specimen lessons at the training schools. There is little real utility in it and a great deal of claptrap, and that makes the expenditure of time the more disagreeable to me. However, I get a good many notes written, and odds and ends of things done.

It was not a profession he would have chosen had he been free to choose, says Sir Joshua Fitch. When Lord Lansdowne offered him the post, he accepted it, as he used frankly to say afterwards, because he wished to marry, and because an assured income was necessary for him. Having entered upon his duties, he at first expected to find the work more interesting than it actually proved to be. He said:

I think I shall get interested in the schools after a little time; the effects on the children are so immense, and their future effects in civilising the next generation of the lower classes, who, as things are going, will have most of the political power of the country in their hands, may be so important. It is really a fine sight in Manchester to see the anxiety felt about them, and the time and the money the heads of the cotton manufacturing population are willing to give them. In arithmetic, geography, and history the excellence of the schools I have seen is quite wonderful, and almost all the children have an equal amount of information; it is not confined, as in the schools of the richer classes, to one or two cleverest boys.

And in words that may be laid to heart by all, he writes to his mother in 1854:

I more and more have the feeling that I do not do my inspecting work really well and satisfactorily, but I have also had a stronger wish than usual not to vacillate and be helpless, but to do my duty, whatever that may be; and out of that wish one may always hope to make something.

Hearing the lessons of students and estimating their goodness or badness appeared to him the most wearisome drudgery, as we learn from the following humorous allusion to portions of his daily routine:

I must go back to my charming occupation of hearing students give lessons. Here is my programme for this afternoon: avalanches, the steam engine, the Thames, India rubber, bricks, the Battle of Poictiers, subtraction, the reindeer, the Gunpowder Plot, the Jordan. Alluring, is it not?

Twenty minutes each, and the days of one's life are only threescore years and ten!

But as his old colleague wisely interposes:

There was here concealed more of real interest in the duties of his office than he actually acknowledged. And, in truth, it may be doubted if any other laborious and responsible post in the public service would have suited him better. A secretaryship, or any office which condemned him to sit for six hours a day at a desk, minuting documents and "having the honour to be," would have proved intolerable to him.

The inspectorship, at least, offered him more freedom, more variety, greater power of adjusting his own duties to his own conveniences, and in his case at least, larger leisure for literary pursuits than he could have otherwise obtained. On the whole, the public has dealt indulgently with those of its servants who have reflected lustre on official life by the repute they gained in the world of letters.

In one of the most admirable passages in this interesting book on the value of such opportunities and the importance of the functions which the inspector is called upon to discharge, when the holder *likes* and enjoys his work, the experienced writer says:

He is called upon to visit from day to day schools of very different types, to observe carefully the merits and demerits of each, to recognise with impartiality very various forms of good work, to place himself in sympathy with teachers and their difficulties, to convey to each of them kindly suggestions as to methods of discipline and instruction he has observed elsewhere, and to leave behind him at every school he inspects some stimulus to improvement, some useful counsel to managers, and some encouragement to teachers to do their best. And it matters much to the civilisation of the whole district whether this duty is entrusted to pedants and detectives who confine their attention to the routine of examination, or to men whose own attainments command respect, and who are qualified by insight, enthusiasm, and breadth of sympathy to form a just judgment both of the work of the school and of the spirit in which the work is done.

Arnold was not an exacting inspector. If he found children looking good and happy, and under the care of a kindly and sympathetic teacher, he would give a favourable report, without inquiring too minutely into the percentage of passes in arithmetic or the number of errors in spelling per child. He valued the elementary schools rather as centres of civilisation and refining influence, where manners and conduct, which he regarded as three-fourths of life, received deserved attention, rather than as places for enabling the maximum number of children to spell and write, and do a great number of sums without a mistake.

All this will, we think, be ever counted to Arnold for educational righteousness, especially as he lived among crooked and perverse official theorists who had little sympathy with his own more generous and liberal ideals on the needs and possibilities of child nature and development. This attitude and habit of mind alone should, we think, endear the name of Arnold to all who are associated with the children in the people's schools, coming, as they do in many cases, from homes where there is hardly one redeeming and refining influence which makes for improvement or healthy citizenship, and a right standard of conduct and life.

His experienced assistant, Mr. T. Healing, has thus described his methods of work:

He never pretended to be an oracle in matters of instruction, and therefore never attempted to prescribe to teachers the precise methods they should use, though he

would often kindly criticise a teacher's mode of handling a subject if it lacked simplicity or breadth of treatment. For example, the multiplication of mere topographical details in geography, neglect to arrange facts in illustration of great general principles, or wandering among points of little practical value in grammar, while the main facts or rules bearing upon the construction of sentences were overdrawn.

He claimed "free play for the inspector," and accorded the same to the teacher, being always ready to acknowledge and praise originality of treatment, and to allow full liberty to give any turn to the instruction for which the teacher's special tastes and acquirements qualified him.

In a school he looked for indications of the operation of the humanising power of literature as shown in the performance of recitation with due intelligence and expression, and, if possible, with feeling; in grammar when marked by accurate thinking and correct application of rules; and in composition by appropriate use of words.

In striving to arrive at a just estimate of the state of the instruction in a school he would often examine in elementary subjects the second standard, as giving some measure of the accuracy of the spelling and arithmetic; and then the reading, recitation, and grammar of the upper division, thus gauging the extent to which anything approaching culture had penetrated.

His usefulness as an inspector appears to me to lay very much in his success in bringing some tincture of letters into the curriculum of the elementary school.

While outspoken and fearless in his exposure of serious faults and weakness, he was not harsh or unsympathetic towards teachers, as his official testimony to their industry and enthusiasm, penned fifty-five years ago and long ere the Lowe proposals were introduced, indicates:

"No one," he says, "feels more than I do how laborious is their work, how trying at times to the best of health and spirits, how full of difficulty even for the best. . . . Still, the quantity of work actually done at present by teachers is immense; the sincerity and devotedness of much of it is even affecting."

MOTIVE AND PURPOSE IN EXPERIMENTAL WORK.

By G. F. Daniell, B.Sc.

PERHAPS I can best introduce my subject by quoting a question which was put to me recently in the following terms: "When an average boy performs an experiment in physics or chemistry, does he realise that he is performing a step in a logical inquiry designed to decide some question which has arisen out of his previous work? Or does he perform certain operations indicated by his master without taking thought in any intelligent manner as to the precise significance of the results he may obtain from his experiment?" After pointing out that the reports of examiners and inspectors indicate that the latter condition of things is the more frequent, my interrogator asked "whether it be *possible* to train the pupils so as to secure a logical habit of mind; or whether school science teaching *must* be merely a training in manipulative dexterity, accompanied by some storing of the mind with more or less useful facts?"

My friend's motive and purpose were transparent enough. He was aware of my conviction that the whole of a boy's work should be directed by purposes which seem to him (the boy) not only intelligible, but worth pursuit. By a broadside of questions he really challenged me to produce some indication of a method whereby a scientific attitude or habit of mind could be developed in our boys through the medium of experimental work. The earlier part of his question suggests that, putting exceptional teachers aside, the only good achieved by Prof. Armstrong and his followers has been a certain amount of manual training. On the contrary, I hold that the heuristic principle has acted as a leaven in the too "doughy" pabulum placed before our boys, to the great benefit of their mental digestion. Where science teaching on heuristic lines has failed to produce the results expected, we find that either the teacher or the examiner, or both, disregarded the conditions imposed by the nature of boyish minds. It will, therefore, be my first care to state as clearly as I can the fundamental principle, the neglect of which spells failure. This principle is the recognition of intelligence as cultured instinct. As our boys and girls grow older, certain inherited instincts appear at definite epochs. These instincts are highly plastic, and their *employment at the time of their appearance* is the first law of education.

This doctrine is far from new, and at first sight appears too obvious to need emphasis. I think disasters occur through giving a grudging acceptance to it, and making efforts to counteract hereditary tendencies instead of seeking their co-operation. For example, if the constructive instinct which is manifested at the age of six, or soon after, is continuously discouraged until the age of ten, there results a boy or girl whose fingers it is exceedingly difficult to train. The atrophied instinct does not readily revive, so that later we have a man or woman deficient in some manipulative powers, and with corresponding under-development of part of their mental potentialities. On the other hand, if we ask a boy of thirteen to carry out scientific research in the spirit and with the motive expected of a Fellow of the Royal Society, we ask an immature chicken to lay eggs. I fear that protagonists of the heuristic method have occasionally blundered in this direction; by so doing they have probably brought discredit on the mode of teaching which they advocate.

My view is that we must put pupils in the position which encourages them to employ with increasing vigour that special mental process which arises from the instinct which outcrops at their particular age. For example, we may wisely give much quantitative experimental work to boys at the age of thirteen or fourteen. We hardly know enough to dogmatise as to the precise divisions, but I feel confident that we must organise our work, from the preparatory school

to the university, so as to accord with successive stages of mental growth. At present we can do this but imperfectly, being hindered on one hand by such influences as school traditions and external examinations, and on the other by the lack of a competent psychology. Possibly the psychology of the future will enable us to recognise epochs of mind-growth quite comparable in definiteness and importance with the arrival of puberty. It will serve as a working basis for the purpose of this article to divide school life in the case of boys into the following periods:

I. Before thirteen.
II. From thirteen to fifteen.
III. From fifteen to seventeen.
IV. After seventeen.

I. Before Thirteen.

This may be described as the period of observational science. Not because there is a "faculty of observation," for this idea must be relegated to the limbo of exploded fallacies. The descriptive epithet is based on a recognition of the fact that the earlier interests are observational. This period should be subdivided, but as my main object is to deal with experimental studies in secondary schools, I am driven to put together all the nursery, kindergarten, preparatory-school, and ante-sixth-standard training into one somewhat heterogeneous agglomerate. The science master finds himself confronted with boys whose knowledge and previous training suggest the assorted lot of the auctioneer's catalogue. It is often within the power of the science master to influence the last year or two of this preliminary period. I would suggest that under favourable conditions a boy of thirteen might have passed through a course including most of the following.

Nature-study, properly graded, so that the work is deliberately adapted to the growing child, making more and more demands on intelligence. At first the motive is wonder, the desire to look at something fresh, to see what happens. Very soon curiosity reaches the point of wanting to know why. Our small boy is very ready to do something and quick to draw inferences, always hasty and usually wrong. It is a great mistake continually to use new objects; we want to develop greater insight into a few. In addition to the animal and plant studies, outdoor observations of all kinds are necessary. The movements of the sun, moon, and stars ought to be made the subject of careful observations. There is one guide which is of the greatest value in framing all syllabuses of instruction, viz., the order of discovery.

The earlier in the world's history a particular discovery appears and bears fruit, the earlier it can be safely introduced in a school course. In the second place, the historical sequence gives a connected idea of the history of discovery and —in the later stages—puts theories into their proper position. Thus our earliest astronomical observations should be geocentric, and the idea of the earth revolving round the sun should not be introduced until we come to speak of the solar system. Weather observations should be made; at first of a very simple character. In connection with mathematics there should be a considerable amount of mensuration work and the construction of simple instruments. Weighing and density (would it not be better to substitute specific volume?) should be included with the mensuration as part of the mathematical course. The motive and purpose underlying the lessons will sometimes be the desire to find out what is happening or how it happens, and sometimes the desire to make something which will be of use. Some power of drawing, both of pictures and diagrams, will be acquired before we reach the next period.

II. From Thirteen to Fifteen.

We now enter upon a more formal course of experimental work; probably hydrostatics and heat will form the greater part of the first year's programme. The search for instruments to accomplish certain ends will supply the motive for a considerable amount of work, much of it being of a quantitative character. Thus, a thermometer, a barometer, a calorimeter, and a still are wanted to solve questions connected with our geographical observations. A fairly complete and logical course is obviously feasible, and may be pursued by "discovery" methods. A chemistry course may flow from a study of the gas-burners which we use, fuel and air leading in one direction to water and acids, or in another to carbonates and alkalies. Or the alchemist's study of acids may lead to work which will readily illustrate the law of combination in definite proportions. Another approach may be made from a study of crystals.

All boys want to know about magnets and electricity. The constructive instinct can be well exercised, and a considerable knowledge acquired by a simple course of instrument-making in this connection. The teacher is following a course of electricity and subsidiary mathematics; the boy's motive is the wish to make an electric bell, a dynamo, a lamp—*which will work*. All the while the boy's powers of reasoning are being developed, and the interrelation of the various branches of physics, chemistry, and mathematics are being accepted as a matter of course. Further vistas of learning are opening to the boy's mental vision, and he begins to desire the logical study of sciences as a means to control the "forces of nature." The amount of manipulation and measurement which has been necessary to carry out the problems of construction which he wanted to solve will make this part of the course one of tolerably accurate physical measurement. At this point I wish to add a word about the motive of fear. Unhesitatingly the teacher should be prepared to make things unpleasant for the boy who wants a too easy life. The fear of the immediate consequences of shirked work should act as a spur to the lazy, but the master who makes the motive of fear perpetually

dominant is doing much harm. Purely heuristic methods are for academic theorists; the practical schoolmaster must consider the varied motives of boys of diverse type; must make it possible for every boy to take his share in the work, and must insist on its performance. Employed with common-sense reservations, heuristic teaching helps to convert subordination into true discipline. I state this in the face of the published opinion of an eminent headmaster "that those who emphasise the heuristic method have had little experience in teaching discipline."

So far the purpose of the boy in carrying out an experiment has been to construct appliances, or to test some simple direct "explanation" of phenomena. He has observed and drawn inferences, and then tested the latter. He has been led to generalise and apply the result to particular cases. But he has not been expected to tackle the atomic theory or even such a problem as the constitution of chalk, which appear to me to belong to the next stage.

III. From Fifteen to Seventeen.

At this age philosophical science becomes possible and desirable. Considerable emphasis should be laid upon problems of chemical constitution, to be worked out somewhat on the lines of the well-worn "research on chalk." Progress in knowledge will appear slow, but the scientific training may be of great value. Unfortunately, the influence of examinations is now a great difficulty, and until we obtain some reform the dilemma of the science master is serious. It is quite in accordance with the principles of following the motive and purpose appropriate to the pupil's age that we should *now* employ text-books and experimental courses which aim at systematic knowledge. Examinations play a useful *rôle* at this stage, when they follow the syllabus of instruction rather than dictate that syllabus.

Throughout the course of experimental work, boys should be acquiring (*a*) habits of cleanliness and order, with the moral idea of the avoidance of waste and of respect for system; (*b*) increase in the powers of attention and expression; (*c*) æsthetic appreciation of nature; (*d*) interest in doing, reached by cultivation of manipulation and initiative; (*e*) the habit of forming mental images; (*f*) a sense of the utility of scientific method; (*g*) a conviction of the uniformity of nature, or, in other words, "that the world is lawful to the core."

In connection with the above, it is well to remind ourselves of the remark made by an inspector of secondary schools in reply to a British Association inquiry concerning science curricula: "It is very rare to find that the result of the teaching is to lead boys to work on their own initiative. Even in schools where the heuristic method is most successfully taught, it is rare to find boys who can apply the methods learnt in previous problems to a new question, even of a related kind." Obviously this statement is of grave import; it immediately raises the question whether the time spent on experimental work had not better have been otherwise employed, at least in the case of the particular schools to which reference was made. To put the matter shortly, let us suppose that a course of experimental physics and chemistry has furnished our boys with the acquisitions (*a*) to (*g*) in the list I have given. Will he confine these acquisitions to the field of physics and chemistry, or will his cultured instincts overflow and irrigate all the fields of his after-school activity? If he is observant when using a test-tube, will he be observant in the ordinary affairs of life? Our inspector says he will *not* carry his power of observation with him when he leaves the laboratory; and I admit that the habit of observation does not, except by effort, overflow into his conduct in the general affairs of life. (Cf. The School World for November, 1908, p. 418 *et seq.*)

Rightly considered, this is no argument against teaching experimental science; *mutatis mutandis*, the same limitations affect every subject of the curriculum in approximately the same degree. What we have to do is to supply our pupils with appropriate and valuable motives, interests, ideas, and habits, and to teach them that the methods they learn in one study are applicable to others. The boy who has learnt to be observant, and has had his hand and eye trained in certain departments of school work, *can* consciously make use of his ideas and experience, and speedily develop a skill in the home which will add to the comfort of the household and diminish the plumber's and carpenter's incursions and bills. Some of the most successful schoolmasters and parsons of my acquaintance have spent part of their youth in a solicitor's or secretary's office. They caused the training in business routine to overflow into their scholastic or parochial work, to the great benefit of those under them. The more nearly related the activities, the easier it is to repeat the acquisition of power in the second field from the experience gained in the first. Teachers should pay particular attention during the last year or two of a boy's school life to the breaking down of water-tight compartments, and direct attention to diverse applications of general principles.

THE NEWSPAPER IN THE SCHOOLROOM.

By A. Barber,

Late Headmistress of the Braintree Pupil-Teacher School.

One of the aims of modern educational reform has been to do away with the reproach that our schools are too strictly academic in character, and, therefore, out of touch with the life for which they profess to prepare their pupils. Bacon, nearly four hundred years ago, asserted that in some departments of business—in "general counsels" and "the marshalling of affairs"—the scholar not only equalled but surpassed the practical man; yet, in spite of

his authority, popular opinion still regards the man whose chief interest lies in books as incapable and untrustworthy in the affairs of ordinary life. The absent-minded and guileless scholar who shows a stupendous, though charming, ignorance of the commonest worldly matters is a stock character in fiction; and critics, with fine irony, have long been pointing to this type as representing the *successes* of our present system. Educationists have been forced to allow that there is at least an element of truth in this criticism. So, like the heroine of a recent play, we have set about reforming ourselves. We have evolved modern sides, commercial departments, technical institutes, workshops, and what not, and we hope that in time these gigantic grafts on to the old classic stock will so modify its character that the resulting growth may fairly claim to be called the true and perfect tree of education.

The spirit which stirs a great body stirs also the individual members. The ordinary form master has been moved to consider the question from the point of view of his own particular circumstances, and has striven to introduce this practical, non-academic element into his own class-room. One of the instruments by means of which he has endeavoured to attain this end has been the daily newspaper. To bring the newspaper into the schoolroom seems at first sight to be a very happy idea. It is one of the recognised forces of the modern world, and touches at almost all points that busy life of action with which the teacher wishes to establish a connection. It is not only "up to date," but, as Emerson says of the *Times*, it "detects the first tremblings of change." It ought therefore to prove a valuable ally.

Yet the newspaper has not attained the position of a recognised aid to education. Many teachers utilise it, but perfunctorily, with no sort of system or regularity. It may be worth while, then, to consider whether the newspaper can, in any efficient manner, be made to serve the purposes of the teacher, and, if so, how the maximum of benefit can be obtained.

The first question which naturally occurs to the mind leads us a little away from this main issue. Is it good for children to read the newspaper at all? There is, of course, much to be said on both sides. Undoubtedly a proportion of the matter to be found in even the best newspaper is unsuitable for children's reading and calculated to do harm. Yet there is one argument on the other side which is, I think, almost unanswerable. The children in our schools will inevitably read the newspaper when they grow up. Would it not, in view of that very element to which reference has been made, be well to give them some guidance which will serve them when that time comes? Such training ought, it is needless to say, to be given in the home, and can nowhere else be given so effectively. But here, as, alas, in many other cases, the school may have to step in and do what the home should do, but certainly has not done. More especially is this the case in schools attended by children of the poorer classes, though even where the pupils' surroundings are presumably those of culture and refinement the abuse of newspapers is not unknown.

This, it seems to me, is the chief reason for introducing the newspaper into the schoolroom—not so much for the sake of the useful information which our pupils may gain from it, but in order that it may be to them an instrument for good and not for evil in the days to come. The influence of the newspapers on the character of the people of this country must be enormous. Almost every Englishman, and most Englishwomen, read the daily paper—and some read scarcely anything else. When we realise this, and realise also the trivial character of much of the matter which fills the columns of some papers, and the absolutely false and degrading spirit which breathes from others, we cannot but wish to help pupils to choose the good and to avoid the bad; and, further than this, to make the best use of the good. Ruskin's words with regard to "books of the hour" (as distinguished from "books of all time"), which he classes with newspapers, may be quoted. Such books, he says, "are a peculiar possession of the present age: we ought to be entirely thankful for them, and entirely ashamed of ourselves if we make no good use of them. But we make the worst possible use if we allow them to usurp the place of true books." If we could bring this home to our pupils, if we could make them realise that the man who can afford to spend an hour or half an hour over his newspaper ought, as a self-respecting person who regards his own intellect as at least above contempt, to give an equal time, if no more, to the reading of a "true book," we should have done a useful work.

How is this to be done? How are we to teach our pupils to discriminate between the good and the bad newspaper, the worthy pages and the worthless, and to see the newspaper in its proper relation to literature, properly so called? Many teachers would answer: By the cultivation of the reasoning and the critical faculties and by the training of literary taste, without any direct or specialised teaching. I would admit at once the force of this answer; but I would plead that the newspaper might occasionally be made the instrument of such training. We are too apt to regard the newspaper as a special product, with special privileges and immunities. To bring it within the circle of things necessary to be studied would do something to ensure that it would be tested by the ordinary standards of literature and of common sense.

It is neither necessary nor advisable to attempt to lay down any rules as to particular methods of carrying out this suggested "newspaper training." These will depend upon the individuality of the teacher. His general attitude towards the subject as one worthy of being treated with thoughtfulness and sincerity will probably go as far towards influencing his pupils as his actual words. One or two general principles only need be discussed.

Should controversial subjects—such, for instance, as Tariff Reform and Women's Suffrage—be dealt with in these "newspaper lessons"? At first sight the obvious answer would appear to be "No." Yet when one thinks of the matter, one realises that it is exactly on these subjects that the voters of the future most need guidance, since it is here that they are most likely to be misled by prejudice and by passion. It is here also that the interest of the pupils can be excited most keenly, and the teacher's object of linking the work of the school to the outside world most fully attained. The aid of the newspaper in this connection is almost indispensable. The articles in the best papers are not, as a rule, violently or offensively partisan; they are clear, keen, and well reasoned—biassed, of course, as the nature of the subject demands, but not unfair. If an upper form of boys or girls could be induced to follow with close attention a few such articles, reasoning out each step in the argument, and comparing the statements brought forward in support of each side of the question under discussion, such an exercise would prove exceedingly valuable from the point of view of logical training, and might help the pupils to form clear ideas on subjects to which they had, in all probability, never attempted to apply their reasoning powers. Boys and girls who "go in" for politics at all are, as a rule, ardent and illogical partisans, governed largely by hereditary traditions and the opinions of their "people." But the most ardent sixth-form Tariff Reformer would take no harm from hearing the objections to his views clearly and dispassionately stated; nor, we suspect, would it be a work of entire superfluity to inform him of the principles on which his own proudly held convictions are based. If the teacher has sufficient confidence in himself and in his class to venture on the experiment of taking an article from one of the inferior papers of the day and laying bare its inaccuracies, its appeal to the selfishness or some other of the base passions of man, its shallowness, its faulty reasoning, and its attempts to hide these defects by means of a showy, high-flown style, he will, if successful in carrying conviction to his pupils, have achieved a great work.

The school debating society may be made to afford valuable help in supplementing these newspaper lessons. Some teachers would prefer, indeed, to leave the whole matter to this society. I would urge, however, that in class the conduct of the discussion is more entirely in the teacher's hands, and that therefore a few lessons such as those suggested have a distinct value. They set the pupil's feet, as it were, on the right road, and show him the spirit in which all further inquiry should be undertaken.

We come next to the question as to how far the newspaper can be useful in supplementing the ordinary work of the school. The subjects for which its aid is invoked usually are history, geography, science, literature, and that vast and chaotic department of knowledge commonly known as "general information." Some teachers adopt the plan of cutting out from the newspaper paragraphs which bear upon the work or contain matter of special interest, and asking their pupils to do the same. These cuttings, after having been read to the class (sometimes even without that preliminary), are affixed to the class-room notice-board, in the hope—usually disappointed—that pupils will devote their leisure moments to a careful study of their contents. They are left, mournfully fluttering from the board, and becoming daily more dusty and dejected in appearance, until one of the periodical "clearing up" times comes round, when they are taken down and either consigned to the waste-paper basket or pasted into a glorified scrap-book. This is a mistake. A newspaper is for the day, and for the day only. To preserve it indefinitely is to do violence to the very idea on which it is based, and to expose it to contemptuous neglect. The paragraphs, if important enough for consideration, should be read, discussed, and summarised in the note-books, maps or valuable diagrams being copied. Then exit the newspaper.

If we read our daily paper carefully, we cannot help being struck by the extremely small proportion which it contains of matter of anything like permanent importance. Its records make history, certainly, but history is made so slowly that the amount manufactured in a day, a month, or even a year is, in ordinary times, almost infinitesimal. Occasionally there occur great crises in which events move rapidly, and then our newspapers become of absorbing interest, and their contents worthy of being chronicled. But the usual petty details of foreign complications and Parliamentary debates are in no wise worthy of forming material wherewith to bother the head of the schoolboy who has, perforce, "taken all knowledge to be his province." Conscientious teachers sometimes err in this respect, and attempt to keep their pupils "up" in all the movements of the day, forgetting that in so doing they are tending to destroy that sense of perspective and proportion which it should be their careful endeavour to foster. In the same way it should be remembered that every Polar expedition does not secure results which greatly affect our geographical conceptions, nor does every paper read before the British Association mark an epoch in scientific knowledge.

The newspaper is capable of affording really useful help in connection with the training in English given in our schools. Some teachers will exclaim at this statement. "Journalistic English" has come to stand for a slipshod, flashy method of dealing with the vernacular, and is regarded generally as a term of opprobrium. This (in the case of the better class of newspaper) is unfair. To quote from the recently published "*Bookman* History of English Literature": "In one respect the collective Press of the English-speaking world has been gravely maligned. The popular view that the purity of the English language is endangered by the slovenly writing in the Press is diametrically opposed to the facts

of the case. Slovenly writing is committed, not to the columns of the Press (which are criticised with Argus eyes both before, by the pick of professional readers, and after publication by all and sundry), but to the pages of long-winded academic studies—to books by scientific experts, who are not expert with the pen, and to the increasing multitude of books by amateur authors who happen to be notorieties. . . . Far from degrading the English speech, the Press operates far more than any other agency to purify and to unify it." I would suggest, then, that a newspaper article might be used in cases where one would hesitate to employ a really fine and classic piece of prose. Dictation exercises might well be given from the newspaper; a leading article would form an excellent subject for a précis, or might be used to demonstrate various rules of composition. Some articles—for example, the "turn-overs" in the *Globe*, would provide most attractive and suitable matter for essays. Occasionally reading aloud from the newspaper should be practised in class—this in spite of Charles Lamb's dictum, "A newspaper read out is intolerable."

THE NEW REGULATIONS FOR SECONDARY SCHOOLS.

THE new Regulations for Secondary Schools have just been issued. Since the famous Regulations of 1907–8, heads of schools have always looked forward with interest and some trepidation to the issue of the Regulations as the most important event of the educational year. This year there is no revolution to record: there has been careful revision and one or two alterations of an important character, but substantially the Regulations for 1908–9 are left unchanged.

Sir Robert Morant's prefatory memorandum summarises the main points with the usual clearness. It lays stress on the fact that the present policy of the Board is "freedom and elasticity." It continues to allow the fullest practicable liberty to schools of varying type to frame their curricula to suit the best interests of the pupils, the capacity of the staff, and the practical requirements of the locality. There is a refreshing absence of red tape, at any rate on the purely educational side.

By far the most important alteration in the Regulations is that dealing with domestic subjects in girls' schools. Last year a course on domestic subjects was allowed as alternative to science for girls over fifteen. This year provision for *practical* instruction in domestic subjects *must* be made in all girls' schools, and an approved course in such subjects as needlework, cookery, laundry-work, housekeeping, and household hygiene may be substituted partially or wholly for science and mathematics other than arithmetic.

This is certainly an important step and will be generally approved. It means that all secondary schools for girls receiving grants from the Board must be provided with rooms and equipment suitable for *practical* teaching in domestic subjects. It must not be thought that such a course is compulsory on all girls, but provision must presumably be made for those girls who wish to take such a course as alternative to science and mathematics when they reach the age of fifteen. It is to be hoped that this action of the Board will be followed by action on the part of the universities in their local or matriculation examinations, and that they will allow "practical domestic science" to count for girls as alternative to chemistry or physics or mechanics for boys.

An important intimation is made in the prefatory memorandum as to the size of classes. Hitherto classes have been limited, "as a rule," to thirty, and must in no case have exceeded thirty-five. While no alteration has been made in the wording of the rule, it is made clear that in future classes over thirty will only be allowed as "an exceptional arrangement to meet special or temporary difficulties of classification." If any considerable proportion of the classes in a school exceed thirty, the Board will regard it as an indication of faulty organisation or insufficient staff. Classes may be combined for part of the instruction in drill and singing, but even in these subjects it is intimated that the more important side of instruction cannot be given to classes exceeding the ordinary limit, and that this must be observed in these as in other subjects of instruction.

This rule will have important results in the future, if not immediately. In many secondary schools drill and singing are taken by visiting masters, and classes are combined freely. If this cannot be done, the expense of employing visiting masters will be so considerable that the demand for ordinary staff teachers capable of taking these subjects will be far more pressing than it is already, and the necessity for properly organised training of secondary-school teachers will become urgent. Educationally, the new regulation is all to the good.

There is a welcome announcement of additional grants for schools which are taking part in the training of elementary-school teachers, although some exception may be taken to the method of assessing it. In addition to the present grant of £5 a head on pupils between twelve and eighteen, a grant of £1 per head will be paid on all such pupils if the average number of bursars or pupil-teachers *completing* their periods of recognition during the years 1908–9 and 1909–10 amounts to (i) not fewer than five, (ii) not fewer than five per cent. of the average number of pupils earning the £5 grant. For example, if in a school of 100 grant-earning pupils not fewer than ten bursars or pupil-teachers have completed their period of recognition during the two years in question, an additional grant of £100 will be paid to the school. A similar grant will be paid for the current year on similar terms. The method of assessment

may lead to some hardship. If the school contains 101 grant-earning pupils, on a strict interpretation of the rule no grant is payable.

Local authorities will probably press for some modification of the rule to meet "border-line" cases. It is well to notice that for next year only those pupil-teachers who have been at least one year in the secondary school before "recognition" will count for the purpose of assessing this grant, and in future years the period will be increased.

The rules as to "free places" have not been substantially altered. In view of Mr. Runciman's sympathetic reception of the Labour Members' deputation some months ago, some anxiety has been felt lest all "scholarships" should be debarred from counting towards the required proportion of 25 per cent., with consequent dislocation of the scholarship schemes adopted by most local authorities. Only those scholarships are barred which are awarded by private benefactors, co-operative societies, &c. In the case of scholarships awarded by local authorities, by the governing body of the school out of school funds, or by the governing body of an endowed foundation, no alteration is made except that it is made clear that such scholarships will only count if they are ultimately tenable for school life. If they are tenable for a limited period, or their continued tenure made dependent on examination success, they will only count as free places if the governing body undertakes to continue the education of the scholar without payment of tuition fee, after the period of the scholarship has expired.

The Board defines the position of the free student accurately. He must be regarded as on the same footing as an ordinary fee-paying pupil. Any rule as to the removal of the free scholar must apply equally to the fee-paying scholar; they must not be made more stringent for one than for the other. It is made perfectly clear, too, that by 25 per cent. of free places the Board means 25 per cent. of the *entries*, and not 25 per cent. of "places." At the beginning of each school year free places are to be awarded, and the number of such places is to be 25 per cent. of the total entries during the previous school year. This may mean more or less than 25 per cent. of "places" according as the average school life of the free student is longer or shorter than that of the fee-paying pupil.

The position of schools in which the bulk of the pupils are boarders has been one of some difficulty. Such schools will apparently have concessions made. The fact that a school is largely or mainly a boarding school "will be taken into account in fixing the proportion of free places" to be offered. It is made clear that a free place does not include exemption from a boarding fee; at the same time, it will not be possible to count as a free-place holder a pupil who is exempted from tuition fee, but is required to pay a boarding fee.

Minor changes in the Regulations are those dealing with school fees. Except with the special consent of the Board, school fees must be uniform and must not be subject to increase at an age beyond twelve. The tuition fee must cover all the subjects of instruction, except printed books and mathematical instruments. All other fees, such as entrance fee or boarding fee, must be approved by the Board as suitable. It is not specified in these Regulations, as in last year's, that the books must become the property of the parent or guardian.

A concession is made to those schools which were unable to fulfil the stringent conditions of the Regulations of 1907–8. They were placed on a lower scale of grant and were excluded from any share in the "special grant" for educational experiments. This last bar has now been removed—a wise concession, as, from their special circumstances, some of these schools are well fitted to become a field for educational experiment.

It is significant to notice the closing words of Sir Robert Morant's memorandum "dealing with the instrument of government" required for all grant-earning schools. "There should be secured to the headmaster or headmistress a voice in appointment and dismissal of the assistant staff, and a right to submit proposals to and be consulted by the governing body." It is well that the Board of Education should lay stress on the responsibility of the headmaster or headmistress, and should be on its guard against the chief danger of local control of secondary education—the subordination of the teacher to the "elected representatives of the ratepayer."

THE BOARD OF EDUCATION AND MODERN LANGUAGES.

WITHIN the space of a few weeks the Board of Education has issued three circulars dealing with the question of modern languages in secondary schools. It is somewhat difficult to realise that these documents proceeded from the same Department, for while Circular 717[1] and Circular 718,[2] which is complementary to it, show statesmanlike wisdom and educational foresight, Circular 705,[3] with its ambitious title, is one of the most disappointing documents which the Board has so far issued.

Our readers may recollect that about a year ago it was moved for in Parliament that the Board should issue a return showing for each of the secondary schools on the Grant List during 1903–4 the total weekly number of hours devoted to the teaching of Latin, French, German, and Spanish during that school year and the school year 1906–7 respectively, and that during the autumn of last year a memorial signed on behalf of the Modern Language Association, the London Chamber of Commerce, the Society of University Teachers of German, the Teachers' Guild, and

1 "Circular 717. Grants for Educational Experiments. Employment of French and German Assistant Teachers in English Secondary Schools."
2 "Circular 718. Conditions of Employment of French and German Assistant Teachers in English Secondary Schools."
3 "Circular 705. Memorandum on Language Teaching in State-aided Secondary Schools in England."

the British Science Guild, directing attention to the serious decline in the study of German in this country, was presented to the Board.

Circular 705 is the result of the efforts which the public has made to elicit some information from the Board as to its views and policy with regard to modern language teaching. Legitimate curiosity, however, is not to be gratified at present, and the reader must peruse some five closely printed pages dealing with the evolution of the Board of Education schools before he comes to the final three pages which may enable him to penetrate the mind of the Board.

Of these three pages two are occupied with a disquisition why the Board should not supply the return asked for. The concluding paragraph is a masterpiece of departmental composition which is worthy of reproduction:

> During the last few years the thoughts and energies, not only of the Board of Education, but of the local education authorities and the governing bodies of schools, have been very largely occupied with preliminary questions of organisation, and it is clear that a period during which matters of finance, of local and central control, of the provision of new premises and the improvement of staffs, are all in a transition state, does not present the condition of things in which such an investigation into teaching methods would be most profitable. When the organisation of the school has settled itself, and a less disturbed epoch has begun, the time will perhaps have come for such inquiries; but even then it might be doubted whether an investigation into the teaching of modern languages would not have to give place to the still more difficult and fundamental question of an investigation into the teaching of English, which, in so far as the classics fail to be accepted as the backbone of a humanistic education, must necessarily more and more tend to take their place.

For years past we have been able to gather from the "Special Reports on Educational Subjects" issued by the Board of Education much valuable information as to what is being done in the way of language teaching in other European countries. There seem to have been no difficulties in conducting inquiries in countries which are not under the British flag. When, however, information is sought about the state of affairs at home, the Board takes refuge in the plea that education is in the melting-pot, and that it and the local education authorities and the governing bodies of schools have had their hands full. The Board hints that two inquiries are necessary, one on the teaching of English, to come first, and one on the teaching of modern languages. We agree with the judgment of the Board in this matter, and suggest that it would be well for these inquiries to be proceeded with, before over-organisation has stereotyped the existing schools.

In the concluding page of the report the Board makes a half-hearted reply to the memorial on the decline of German:

> The principal evidence adduced in the memorial as showing the alleged decline is derived from the decreased percentage of candidates who took German in the Oxford and Cambridge Local examinations in 1906 or 1907 as compared with 1895, and in a lesser degree with 1900 and 1905. On this it must be observed that, except as regards girls taking the Cambridge Locals, the actual number of candidates taking German has not varied materially between 1895 and the present date, and that the reduction in the percentage is to be explained partly by the fact that an increasing number of the best pupils in secondary schools take a University Matriculation or Leaving Certificate examination (for which German can now generally be offered instead of Latin) in lieu of the Local examinations, and partly by the fact that the very large increase in the total entries for the Local examinations in recent years has been in a great measure due to the adoption of those examinations as qualifying examinations for elementary-school teachers, for whose purposes modern languages are not of the first importance. At the same time, the Board do not desire to controvert the opinion that the advance in the study of German is not at the present moment as rapid as the advance in the study of French or even of Latin; and while they possibly attach more value than do the memorialists to the study of Latin as an element in a liberal education, even for pupils who are ambitious of attempting the higher scientific studies, they are fully sensible of the importance of the place which should be held by German in the curriculum of secondary schools.

Anyone who is at pains to investigate the actual figures submitted to the Board (see THE SCHOOL WORLD, December, 1908) will be surprised at the genial optimism which enables that body to speak about *the advance* in the study of German. It is not only in the Local examinations that the language is steadily losing ground; many other examinations tell the same tale. Loud complaints are now heard about the ignorance of British officers of German. If the study of German in this country was in as satisfactory a position as is the study of English in Germany we should not hear these complaints, for there would be no ground for them. The point at issue between the Board and the memorialists is briefly this: the memorialists press, *inter alia*, for the encouragement of a curriculum in which the mother tongue and modern languages are to supply the humanistic side. Schools of this type flourish in other countries, and supply useful members of the Public Services who are capable of holding their own with their fellows who have been brought up on "the higher literary training": the Board still stands by the traditional view, and holds out no hint of the establishment of a curriculum on the lines of the *Oberrealschule*. There is a great opportunity for experiment in this direction, and we believe that this experiment should be made in the interests of the prosperity and progress of the British nation. Until the experiment is made the impression will prevail that the Board is too wrapt up in tradition to rise to the full height of its opportunities.

There is some comfort to be derived from the perusal of Circular 717. We like the title, "Grants for Educational Experiments." By the facilities which the Board has created for the interchange of teachers between this country and the Continent as "assistants" the cause of modern language teaching can be furthered. Under the revised regulations the Board is now prepared

to bear half the maintenance grant for foreign teachers accredited to this country and attached to English schools on the Grant List. Thus, for an annual expenditure of £30 any Board of Education school can recruit and vivify its modern language teaching and avail itself of a system which personal knowledge leads us to believe is educationally sound. It will be interesting to know, after the lapse of a year, what success this new departure has achieved and how many of the 800 schools or so which the Board controls are taking advantage of this great opportunity.

THE ARMY QUALIFYING EXAMINATION.

By de V. Payen-Payne,
Principal of Kensington Coaching College.

IT will be within the recollection of our readers that the report of the Army Qualifiying examination of September, 1908, caused widespread dismay among those who have the educational advancement of England at heart.[1] Not only were 65 per cent. of the candidates rejected, but the examiners' reports reflected very harshly on the methods of teaching at our chief public schools. The report on the examination of last March has just appeared, and although the percentage of failure is lower—only 50 per cent.—the reports of the examiners are as severe as before. The percentage of failure in the different subjects is as follows:

	Per cent.		Per cent.
French	40	Geometrical Drawing and Measurements	27
Science	39	English	23
Latin	33	German	21
Higher Mathematics	33	History and Geography	18
Elementary Mathematics	32		

In essay-writing most of the candidates "eked out their scanty resources by a liberal use of slang and colloquialisms, which they plainly could not distinguish from good English." In précis the work "was disfigured by slovenly handwriting, bad spelling and composition." "The number who have been taught geography on modern lines is apparently quite small."

In arithmetic "the worst part of the work was that on which special stress is laid in the syllabus . . . the value of a centimetre varying from millions of inches to thousandths of an inch, and the litre being used as a measure of length." In geometrical drawing "candidates should realise that an incorrect result, with no working, leaves nothing at all for which credit can be given." "The general character of the work" in chemistry "was not satisfactory, and the defective education of a considerable number of the candidates very conspicuous." "The work sent in by the candidates" in physics "was again extremely poor, showing little grasp of either scientific principles or details."

In French "the work was generally very poor and distinctly below the average of previous years. Not only was the knowledge of French in many cases very defective, but the oral examination disclosed a general want of keenness and mental alertness. It is impossible to lay too much stress on the necessity of laying the foundation of a good pronunciation at an early age. Even a year's residence abroad can make very little impression if a bad pronunciation has been acquired young." "In the translation from English into German more than half of the candidates were quite incapable of writing a single German sentence with a reasonable amount of accuracy." "A considerable proportion" of the Latin papers was "practically worthless, the writers having very vague ideas of the Latin language and transgressing the most elementary rules."

It is evident from the above extracts that the best brains of the nation are not presenting themselves at this entrance-door to the Army. It is to be hoped that better material is entering by means of the Universities and the leaving certificate examinations. For it must be realised that this Qualifying examination is the only one that a candidate for the infantry or cavalry has to pass before commencing his technical studies. There was no competitive examination for Sandhurst in June, because the number of candidates was less than the number of vacancies to be filled. For some time past practically all candidates have been admitted who could pass the doctor, so the authorities evidently do not see the need of putting them through the farce of a competitive examination where everyone is successful.

[1] The School World, February, 1909, page 45.

EDUCATIONAL NOTES FROM FRANCE.

By Jeanne Morin.

WITH the fine weather arrive at our modern Babylon large numbers of people intent on meetings. They are relieved and yet a little disappointed not to have hooligans jumping out at them from every quiet corner. "Paris is so dangerous, you know!" They need not, however, be too downcast if they are pining for excitement, and, like the man in Grimm's fairy tale, want to know how to shiver; any day may bring them face to face with an excited crowd, for we are not too tranquil just now—and, indeed, our educational world itself is somewhat in a period of ebullition. For have we not an ex-priest lecturing at the Collège de France? And it is not many weeks since we let off steam by throwing rotten eggs and oranges at the head of Joan of Arc's *soi-disant* detractor.

* * *

Some efforts have already been made to carry out the third part of the programme of Le Congrès international des langues vivantes, of which a report appeared in The School World for June. La Société de l'échange international des enfants, at the last meeting, held under the patronage of the former Minister, M. Pierre Baudin, and M. Gauthier, head of the Secondary Education Department, showed

by statistics that, strangely enough, the exchange of pupils between France and Germany is greater than between France and England. During last holidays thirty-three children were exchanged with England, against eighty-eight with Germany; in term-time twenty-five with Germany, against twelve with England. It is to be hoped that in the future England will more readily avail herself of the services of the association. It is only fair to add that most often it is French people who prove reluctant to part with their children, the girls above all.

* * *

WE exchange not only our children, but our teachers, and readers of THE SCHOOL WORLD will certainly be glad to know exactly the difference between the words *lecteurs, lectrices; assistants, assistantes*, as they involve a difference of consideration and salary. Lecteurs and lectrices are temporary professors on the staff of a university, and deliver lectures, which are generally fairly well remunerated. Assistants help teachers in public secondary schools. They are selected by the Government of each nation with which France has an agreement. In Scotland they are chosen by the secretary of the Scotch Education Board, and in England by the Office of Special Inquiries and Reports of the Board of Education, while in Paris l'Office d'Information et d'Études au Musée pédagogique, rue Gay-Lussac, Paris, takes this responsibility.

* * *

AN important reform has been made, so far as English teachers in France are concerned. The English students employed in French training colleges as helps to teachers—that is to say, to give daily two hours' English conversation and in return to take advantage of all opportunities offered to them for improving their French—will no longer have to pay the usual 450 francs for their board, but they will be received *au pair*. The demand for such assistants is increasing largely. At the beginning of the year help of this kind was wanted by thirty-six lycées de garçons, thirty-one lycées de filles, twenty-two écoles normales d'instituteurs, and forty-two écoles normales d'institutrices. If this arrangement continues to increase in popularity, it will be an excellent way of keeping up cordial relations between the two nations. And already English and French teachers have been quite satisfied with their happy sojourn in the foreign land.

* * *

AT last an important change in the teaching of drawing has been decided upon in France. The rising generation will say good-bye with joy to conventional forms, for now they are to learn to draw what they see around them. France has never lacked artists—and good ones, too—in spite of the unintelligent manner in which this subject has hitherto been handled in French schools. Genius, however, forces its way through obstacles that are insurmountable to the rank and file, who generally leave school unable to draw the simplest object from the life. The faculty of observation has not been cultivated. And nothing will develop this faculty better than the method, now proposed, of making the pupil model every object before he draws it. In time French teachers may be coming to ask their English *confrères* to give the result of experiments in teaching brush work, for colour will also be allowed and encouraged, so as to provide more lifelike results.

* * *

THE Lycée Fénelon, one of the foremost girls' high schools in Paris, has lately commemorated its twenty-fifth anniversary. This was an important event, and those who passed through the stormy discussions a quarter of a century ago, out of which evolved our modern wiser system, alone could tell us how important! Many leading people of the educational world were there. One of our most graceful poets, M. Chantavoine, composed a toast for the occasion, of which I give a few verses.

Le moissonneur, sa gerbe faite,
De beaux épis pleins et dorés,
Peut bien avoir le cœur en fête,
Lorsque les épis sont rentrés.

* * * *

25 ans, c'est toute une histoire,
La chère histoire d'un passé
Qui n'aura pas été sans gloire
Et dont rien ne s'est effacé.

* * * *

Sa maison d'année en année
Comme un rosier blanc a fleuri,
Celle qui fit sa destinée,
Veille toujours sur son esprit.

* * *

STILL, great as the advance has been, girls' high schools are not yet like those of the boys'—fortunately so, those good folk will say who set their faces against even optional Latin. The Recteur de l'Académie de Lille has lately had an amusing correspondence on this subject with a mother complaining that a course of Latin would entirely break down her girls' health and, result even more disastrous, prevent their future marriage! For the average man, she is sure, will prefer his wife "un-Latined." The Recteur de l'Académie de Lille answered with much common sense and some little wit that a girl who knows how to work will not be *surmenée*, even in learning Latin, which, he asked her to notice, was quite optional. He added that the woman of tact will not show off her Latin. Besides that, it is good for children to have a mother able to help them. Father forgets often in his business what he learnt at school, and even he does not know how to teach the little he remembers, for patience is not his natural virtue. For my own part, however, I think the best argument will be that to know French well we must know Latin. The proof of that is that our best writers were all good Latin scholars. *C'est pourquoi la cause du latin est gagnée.*

X

Women teachers cry out for justice. The women teachers of French public high schools complain, and with reason, that they are not represented on the High Council of Professors. Unfortunately, a new law will have to be made before the way of electing this Council can be changed; and so this complaint cannot even be taken into consideration. A petition is expected to be brought before Parliament; but what a complicated business it is for such a simple change!

* * *

The Statut des fonctionnaires is another great excitement. "L'accepteront-ils, l'accepteront-ils pas?" This is "la rengaine du jour." The question is, will the Statut des fonctionnaires be accepted in the form given to it? It is the old conflict between the individual will and authority. Who will have the last word it is difficult to prophesy. In any case, however, we don't imagine teachers will follow the example given them by the Post Office. The professors feel too much the responsibility of their position to take such a step should even their demands not be met. Of such conduct, however, their pupils have set them an example, for recently the little scholars of a primary school struck because their teacher was not up-to-date enough for them. One of his failings in their eyes was his lack of interest in any kind of games or sport. England, it is your fault! To what have you brought us steady French people!

* * *

"Qui trop embrasse mal étreint." "La crise du français est à l'ordre du jour." So the subject of many articles in reviews and magazines is the way in which we are neglecting the study of our own language. In fact, all over the world, pupils take up so many subjects that they forget how to speak and to write their own language. Should this state of affairs continue, a Parisian, in order to refresh his ear with a little good, pure French, will go across to London, where only the language of Molière will be known, while English folk will come and walk down our Avenue du Bois to get the genuine Cockney, which by then will be quite extinct in London.

PERSONAL PARAGRAPHS.

Mr. ALEXANDER DEVINE, of Clayesmore School, Pangbourne, is circulating a striking pamphlet on the need of reform in public-school education, in which he pleads for the appointment of a Royal Commission as the most effective method "of revitalising and bringing education thoroughly up to date." There is a strong *prima facie* case for such a Commission, which is evidenced by the fact that within the last two or three years curricula committees have been appointed by the Classical Association, the British Association, and the Headmasters' Conference. The headmasters of Eton and Winchester will also shortly publish a book on the curriculum of preparation for a public school. The efforts of these committees are valuable as a *proscissio*, or first turning of the soil, but are bound to end only in piecemeal remedies. Mr. Devine urges "the entire recasting of the curriculum, which is essential, and indeed inevitable, if the boys of to-day are to receive instruction that will fit them for their vocations in the world that is—not in one that was."

* * *

Since the last Commission, some fifty years ago, the nation has made advances—social, scientific, and general—which are out of all proportion to the advance of any previous century, and it cannot be maintained that educational progress has been to any degree commensurate with this national advance. I think it cannot seriously be argued that in England, as in Germany and America, education leads the way. Rather, both in public interest and in public finance, it limps lamely along, and only now and then is a grudging glance thrown backward at the unfortunate laggard. The trouble begins with early specialisation at the preparatory schools, and, as Mr. E. D. Mansfield says, it is perpetuated in the scholarship system: "To this all public-school education is subordinated, with disastrous results to the interests of the great mass of boys of average ability." Mr. Devine arrays some weighty criticisms of public-school methods, and among them is this sentence, written by the late Lord Salisbury (in 1883): "The extreme uselessness of the education of the upper classes is deplorable, and in this day of keen competition handicaps them heavily"; and this by the late G. F. Watts, R.A.: "We are rearing Civil Service clerks, and can get lots for a pension."

* * *

Like Abbotsholme and Bedales, Clayesmore was founded to resist premature specialisation and the pernicious effects of cramming for public-school entrance examinations. But, unfortunately, the public schools and the universities have not yet come into line with these worthy experiments. Clayesmore, more or less upon the lines of the system of the Royal Naval College, Osborne, selects its boys by "examination and interview," the candidates being judged "by the impression they leave upon the examiners of general intelligence and mental alertness, combined with the ability they reveal *to make use of their knowledge*." Mr. Devine claims that the distinctive note of Clayesmore is "Learning is an adjunct to ourself": it steadily refuses to treat the self as the adjunct. There would seem to be a sufficiently strong body of opinion among prominent educationists in favour of non-specialisation up to fourteen years of age to justify the opening up of the whole question in a comprehensive way by his Majesty's Government. *Now* is the acceptable time.

ALL who came into contact with the late Mr. A. G. Munro were impressed with his kindliness and geniality. He had been on the teaching staff of the City of London School for twenty-seven years, and so served under three headmasters. In the question (if there be one) of married or bachelor masters, his life is an excellent argument on the side of the bachelors. He identified himself almost entirely with boys' interests. He did pioneer work in organising the athletics of the school before it became possessed of a playing-field. His Saturday Excursion Club was a great feature in the life of the school. Many of his holidays were spent with boys in Paris and elsewhere, and much of his time was devoted to writing serial stories for boys. Among his more public interests were the Footpaths and Commons Preservation Society and the Assistant-masters' Association. It was in connection with the latter that I met him, and we served together on the Association's Press sub-committee. It is given to few schoolmasters to live a life so singly and solely for the benefit of their scholars.

* * *

MR. H. COURTHOPE BOWEN, whose death was recently announced, I first knew in connection with the College of Preceptors, as an examiner of the modern side of my own school, as the editor of some handy little school selections of English poetry, and as a near neighbour living in Baker Street. He exercised a considerable influence on English education, partly through his enthusiasm for Froebelian ideals and methods—he was for twenty years chairman of the National Froebel Union and wrote a good "Life of Froebel"—and partly through his unfailing support of training and registration of teachers, in connection with which objects he did sterling work on the Council of the Teachers' Guild. His genial personality was a valuable aid to his work for education.

* * *

AMONG recent appointments are: Miss S. S. M. Furness, assistant-mistress at Blackheath High School, to be headmistress of Dulwich High School; Miss Margaret Gale, assistant-mistress at Ipswich High School, to be headmistress of the same; Mr. E. C. Chappell, who has been lecturer at the Brighton pupil-teachers' centre, senior master of Roan School, Greenwich, and a master at Hackney Downs School, to be headmaster of Spalding Grammar School; Mr. John J. Lloyd Williams, headmaster of Oswestry School, to be headmaster of Ruthin Grammar School; Mr. F. Shirley Goodwin, of the Perse School, Cambridge, to be rector of Glasgow High School; Mr. W. J. Watson, rector of Inverness Royal School, to be rector of the Royal High School, Edinburgh; Mrs. S. Arthur Strong to be assistant-director of the British School at Rome.

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THE University College at Cardiff has found a benefactor in Lord Tredegar, who intends to subscribe £5,000 to its funds.

THE new headmaster of Sherborne is Mr. Nowell Charles Smith. A scholar of Winchester and New College, he took first classes in Moderations and Lit. Hum., became Fellow of Magdalen, and later Fellow and tutor of New College. He returned to Winchester in 1905 to take over Mr. F. Morshead's house. He has published work in English literature, especially in connection with Wordsworth.

* * *

MR. OSCAR BROWNING, who for eighteen years has been the enthusiastic principal of the Cambridge University Day Training College, does not seek reappointment. The success of the college has been largely due to Mr. Oscar Browning's unsparing devotion. ONLOOKER.

THE CRITIC AMONGST THE SCHOOLMASTERS.

CRITICISM is ever welcome to an open-minded profession, especially when it comes from men who are in a position to judge of the results of professional labours. Perhaps Judge Parry sees too much of our failures to make his remarks altogether above suspicion; nevertheless his impressions are told with such downrightness, and, moreover, with such literary force and flavour, that they command respectful attention.[1] He seems to have been born with anti-scholastic tendencies, and in his maturity he is still grateful for his early escape from some "gaol of captive youth," to which he acknowledges no debt beyond the recollection of a few irregular French verbs. Surely his experience was worse than Voltaire's, who said that he owed nothing but nonsense and Latin to the best school system in Europe.

As to the other folk, what has been the result of all their schooling? They find intellectual occupation in reading low-class literature, they support huge gambling organisations, and maintain prosperous proprietors of quack medicines. As to arithmetic, what of that? Just look at the books of the small shopkeeper! Not here, perhaps, but rather in the calculation of the odds on a horse-race shall we find its most successful application. Rousseau's indictment of the results of scientific progress was not more severe!

What is the remedy? "A schoolmaster armed with a primer is an abomination of desolation standing in a holy place?" Take away the primer and give him freedom, but take care to choose men of good domestic tastes, who like to see neatness and tidiness in their homes, and grumble when the chop is badly cooked or when their wives and daughters mistake costly finery for comely attire. The long-eared pedant is out of place, academic distinctions notwithstanding. The elementary schools want honest, simple folk, who shall teach the elementary facts of life in all humility and reverence, adding thereto "something of its arts and its crafts, and so much or little of its learning

1 "The Disadvantages of Education." By his Honour Judge Parry. 30 pp. (Sherratt and Hughes.) 3d.

as can be a service and not a hindrance to the child's career."

The county court judge looms largely through all this, and it is right that we should hear his side of the matter. But a measured judgment must be based on observation from a less restricted point of view. Is this sort of thing much more valuable as an estimate of the actual results of forty years' schooling, than that of a university don who should pass judgment from his knowledge of the old elementary-school boys who not infrequently reach his academic heights? "By their fruits you shall know them"—but we must take care to get average samples.

His school life was thrown away on Judge Parry—irregular French verbs always excepted—but John Milton's mature work shows abundant traces of the time he spent at St. Paul's in the days of good King Charles.[1] Mr. A. F. Leach's essay is much more, however, than a learned elucidation of this particular theme. It is a valuable contribution to the history of education, though the style of the telling is marred here and there by long and involved sentences, of which at least one defies analysis.

Happily, affectionate gratitude to school and schoolmaster is not so very uncommon. We may take comfort from such stories as that which Mr. Felkin writes of University College School, now rejoicing in palatial quarters at Frognal.[2] Its foundation only dates back to 1830, but, thanks most of all to Dr. Key, the head of the school from 1842 to 1875, it has a reputation for "religious tolerance, breadth of curriculum, and sympathy between masters and boys." Features of this kind create a school atmosphere which gets into the vitals of its *alumni* and fills them with lifelong memories of the pleasures of school life.

History tells of many others besides Milton who acknowledged their indebtedness to school. Hegel records the fact that one of his teachers in the Stuttgart Gymnasium introduced him to Shakespeare, and his diary tells, with affectionate regard, of the times this teacher sat by him "in that beloved little room."[3] It will come as a surprise to many that Hegel was a practical schoolmaster as well as a philosopher, and Mrs. Mackenzie has done good service in making his pedagogic activities as well as his educational views available to English readers. The book is prefaced by a note at Prof. J. S. Mackenzie's hands. Dr. Mackenzie knows his Hegel better than his Rousseau, or he would hardly have accused the latter of over-emphasising the emotional aspect of education. Surely it is one thing to write emotionally and another to make emotion a conspicuous feature of a scheme of education. Emile lived for twelve years with his foster-father without feeling any gratitude! This is hardly an excess of emotion.

1 "John Milton as Schoolboy." By A. F. Leach. (Frowde.) 1s.
2 "From Gower Street to Frognal, being a Short History of University College School from 1830 to 1907." By F. W. Felkin. viii+40 pp. (Fairbairns.)
3 "Hegel's Educational Theory and Practice" By Prof. Millicent Mackenzie. xxi+192 pp. (Sonnenschein.) 3s. net.

The production of primary-school masters is the work of the training colleges. What, I wonder, will they think of Judge Parry's criteria of professional fitness? At Armstrong College, under Prof. Mark Wright's inspiration, valuable experiments are being carried out which would, so far as they go, doubtless meet with his Honour's approval.[1] A camp-school staffed by students under the general supervision of the college authorities has provided interesting opportunities both for the observation of the boys and the exercise of the resourcefulness of the teachers, deprived as they were of the ordinary machinery of the schoolroom. It was an excellent idea, and it has proved a most valuable experiment. "Health, physique, and the humane influences will be the less in danger of being sacrificed to mere instruction now that students have lived for a fortnight in such close companionship with boys." The training colleges as a whole are concerned in their *Record*, which has lately made its second appearance.[2] Its value lies in the fact that those who are responsible for the provision of our elementary-school masters tell the story of their work in their own way. We see what it is that appeals chiefly to them, and where the difficulties lie. One of the greatest of these difficulties is that of the demonstration school, which, as Prof. Adamson points out, is unable to adapt itself to the problems of the training college both for want of freedom and for want of funds. Research cannot be undertaken if there is neither staff nor money beyond that which is available for every primary school.

The schoolmaster, says our critic, "can only teach what he knows, and if one generation only learns what the last generation can teach there is not much hope of onward movement." Yet the latest historian of education tells us that, like his predecessor Davidson, he regards education "as a species of *conscious* evolution."[3] For him the school is the growing-point of the race—stagnation in the school, such as Judge Parry talks of, can only be found when the intellectual life of the whole community is at its lowest ebb. China has lived for many centuries on schoolmasters whose task is to teach just what their generation knows. Inspiration had exhausted itself in Confucius, and further intellectual advance was inconceivable. It is just this factor of personal inspiration which the critic takes no account of as he passes judgment on the schools of to-day, and it is just the presence of this inspiration that makes it possible to write a history of education. The story of education in the ancient world is simply and admirably told in Dr. Graves's volume. Each section is enriched by adequate bibliographies, thereby greatly adding to the value of the book.

No branch of education has received such thoughtful attention as that which deals with

1 "Armstrong College, Department of Education: Papers." Second Series. 68 pp. (Reid.) 1s. post free.
2 *Training College Record.* Vol. i., No. 2. February, 1909. 126 pp. (Longmans.)
3 "A History of Education before the Middle Ages." By Dr. F. P. Graves. xiv+304 pp. (New York: The Macmillan Co.) 5s. net.

young children.[1] Even Judge Parry has a kindly word to say for the kindergarten. The latest volume on the subject strikes one as a distinct advance upon its predecessors, though its author is inclined to accept Fröbel too uncritically. Is it true that the child acquires his knowledge by passing "from objects to pictures, from pictures to symbols, and from symbols to thoughts"? Miss Plaisted quotes these words of Fröbel with approval. To the writer it is either meaningless nonsense or bad psychology. No educational thinker has committed the fallacy of interpreting children in the light of his own experiences and way of looking at things quite so much as Fröbel. It is a pity that, whilst we take our inspiration from him, we should not try to arrive at simpler explanations of children's actions than he has given us. We shall not love our little ones any the less for understanding them better. But in spite of this almost traditional habit of mind where the teaching of little ones is concerned, Miss Plaisted has given us an admirable book—practical and suggestive from cover to cover.

It is only indirectly that teachers are concerned with much of the subject-matter of Dr. Johnston's terrible indictment of the conditions under which so many children are brought into the world.[2] The school cannot prevent overcrowding or the many evils attendant upon insanitary housing. It might, however, do much towards the formation of what has been called a "health conscience" in the masses of the community, and it would be well if the teachers in our elementary schools were students of public health and of vital statistics to a much greater extent than they are. Nor, for that matter, ought the secondary schools to shut their eyes to these things, even at the cost of a little less Latin. In this particular regard we should probably find universal agreement as to the *advantages* of education.

POLITICS IN THE EIGHTEENTH CENTURY.[3]

THE first half of the eighteenth century is a difficult period both in English and Continental history. In England the landed aristocracy had made good their position against the Crown, and controlled both Houses of Parliament. But the territorial magnates had to consider the interests of the commercial classes, who were developing the resources of the East and West Indies, and the foreign policy of the country was therefore dictated as much by the desire for trade in America and India as by the dynastic question between the Stuarts and the Hanoverians. On the Continent, after the war of the Spanish Succession, the confusion was bewildering, and between the rival ambitions of Spain and Austria, of Great Britain and the various rulers of France, the changes in alliances and hostilities were kaleidoscopic in variety.

Mr. Leadam conducts the reader steadily through this tangle of politics, both at home and, so far as is necessary for English history, abroad. He has used all the information supplied by the Historical Commission Reports and the works of foreign writers since the last standard works on this period were published. The teacher who wishes to be up-to-date in his lessons on this period should therefore peruse this work, and though he will find himself somewhat overwhelmed in this first perusal by the multitude of names and the detail of military events, he will be glad to keep the volume by him as a useful work of reference.

We have noted only three matters, and these small ones, that raise a query. Should not "he" (p. 234, l. 8) be omitted? "Seaford" (p. 431, l. 15) should surely be "Aldborough" (cf. p. 435, l. 2)? What is Mr. Leadam's authority for Maria Theresa's letter to Madame de Pompadour (p. 444, l. 7), which until now has been denied belief? These are slight and doubtful blemishes, and we prefer to point out the matters specially new or specially emphasised which have hitherto been neglected. The war of the Spanish Succession was designedly commercial rather than dynastic. It was the fear of losing the South American trade rather than the fear of a Stuart restoration which led Anne to declare the war which William III. had planned. In that war Portugal was won over to the side of the anti-French allies only when the Archduke Charles was substituted for his father, the Emperor Leopold, as the candidate for the Spanish inheritance. Portugal did not want, any more than the English Tories in 1711–13, Spain to be added to Austria, and so a new Charles V. to dominate Europe. Our readers have doubtless wondered why Queen Anne's Ministers assented to the Scottish Bill of Security in 1704. Mr. Leadam points out that the Bill was presented in July, during Marlborough's Blenheim campaign, when his defeat might probably be followed by a French invasion of Scotland. Besides the Treaty of Vienna of April–May, 1725, between Spain and Austria, there was another between the same Powers in November arranging for mutual armed help against France and Great Britain.

Mr. Leadam definitely dates the *prime* ministership of Walpole from his dismissal of colleagues because of their votes on the Excise Bill in 1733, and points out that he stayed in office when war was breaking out in 1739 only because George II. twice refused to accept his resignation. The verdict of Shelburne on the Duke of Newcastle, that he "rather cajoled than imposed on mankind, passing for a man of less understanding than he was," is preferred to the sneers of Horace Walpole at the peculiarities of his speech and manner.

In addition to the strictly political history of the time, there is a chapter on literature and manners, as well as two appendices—one a full

[1] "The Early Education of Children." By Laura L. Plaisted. xiv+98 pp. (Clarendon Press.) 4*s.* 6*d.* net.
[2] "The Wastage of Child Life." Second Edition. By Dr. J. Johnston. 131 pp. (Heywood.) 6*d.* net.
[3] "The History of England, 1702–1760." By I. S. Leadam. (Political History of England in Twelve Volumes. Vol. ix.) xx+557 pp. (Longmans.) 7*s.* 6*d.* net.

bibliography, the other a list of the members of the various Ministries—plans of six battles, and two maps—one of Eastern and Central America in 1755 and the other of India in the time of Queen Anne—and a good index.

ROMAN DAILY LIFE.[1]

MR. WARDE FOWLER is one of the few modern scholars who charm by their style no less than they instruct by their learning. In his case, the style is the man: it is no Stevensonian hotchpotch, no Meynellian preciosity that charms, but a warm sympathy and a genial humour, coupled with simplicity and clearness. To Mr. Warde Fowler the Romans were living beings, not pegs to hang facts on, and he transports us into their midst with him.

The first chapter conducts the visitor through ancient Rome, with the help of a map and a description, which may serve as a setting for the story that is to follow. We are then introduced to the *plebs urbana,* and shown how they were housed, fed, clothed, and employed. Here some important points are brought out. Thus the image of the Roman home, so dear to Cicero and so firmly impressed on the student's mind, is shown not to be true of the mass of town-dwellers, who lived in flats or rooms, like rabbits in a warren. When we realise the thousands of these poor folk, and their poverty, the importance of a cheap supply of imported corn becomes clear. The Roman problem is ours, with a difference; the danger of interference with the supply is vital in both cases. These poor Romans lived by handiwork, as ours do; it is not true that all such work was done by slaves, as the trade-gilds are enough to prove. Next we come to the business men, some working privately, others for the State (*negotiatores, publicani*). Joint-stock companies, loans, banking, and other such business went on much as in the modern world; but the basis of prosperity was then less stable, since capital came not from productive labour but from war-booty or tribute. Above the middle class came the aristocracy, who did most of the governing of the empire. Mr. Warde Fowler pays a tribute to the great qualities of this class in Cicero's day and before; and, indeed, the decline of Roman life was due to the almost extinction of it in the proscriptions and civil wars.

The subject of marriage brings in a sympathetic description of home life in the early days, and a less agreeable one of the wreck of family life in the troubled times. But this picture is relieved by a touching account of happy wedded life in an inscription of about 8 B.C., in which a husband addresses his dead wife; here we see that even at the worst times the old virtues lived. We may set this document against the strictures of moralists, satirists, or reformers. Education forms the next subject, and the author shows how it depended on the existence of the home. It was a noble education in conduct and manners, with very little bookish about it; but the educators were not schools.

Any account of the slaves suggests a discussion of their effects on economics and on morals. The first topic supplements what was said in the second chapter: free labour must have been common in the towns, but the evidence has not yet been properly examined. On the farms it was also used, although most of the labourers were slaves. On the State the manumission of large numbers of slaves had a very bad effect, in flooding it with inferior men, much as our own State is damaged by the influx of worthless foreigners. The severing of all social and moral ties must have had a terrible effect on the slaves themselves, and through them on the Roman State; while the effect on the owner was no less mischievous. The rich man's house introduces us to Cicero's country villas. The rest of the book is concerned with daily life, amusements, and religious observances. We need not dwell on these, which do not, perhaps, contain so much that is original as the other parts of the book. But all are permeated by the same genial and kindly spirit, which makes the book charming to read.

[1] "Social Life in Rome in the Age of Cicero." By W. Warde Fowler. xvi+362 pp. (Macmillan.) 10s. net.

OXFORD ESSAYS.[1]

OF these two delightful volumes of Oxford essays, issuing simultaneously from the house of Murray, we give precedence of place to the Vice-Chancellor's. His studies, familiar already to readers of the *Quarterly* and the too short-lived *Monthly Review,* deal with the *di maiores* of poetry, ancient, mediæval, and modern—with Sophocles and Virgil and Dante, with Gray and Tennyson and their debt to Dante, with Matthew Arnold, and with the art of translation discussed chiefly in relation to the great poets. There is also a paper on "Ancient and Modern Classics as Instruments of Education" (an address to the Modern Language Association), and a study of "*In Memoriam* after fifty years." If we are nowhere taken far from the beaten tracks, that is not a disadvantage. *Securus iudicat orbis terrarum.* The *di maiores* deserve their place. We cannot go back to them too often; nor would it be easy to find safer guidance in literary preferences than is afforded by these eminently well-balanced essays, written with knowledge and enlightened taste and an unfailing enthusiasm for the best and greatest things in poetry. It is characteristic of the temper of the book that Sophocles is preferred before Euripides. "Modern taste is sometimes drawn to Euripides because it finds in him its own pleasant vices, and finds them in a glorious form. But

[1] "Essays of Poets and Poetry Ancient and Modern." By T. Herbert Warren. vii+328 pp. (Murray.) 10s. 6d. net.
"Six Oxford Thinkers." By Algernon Cecil. x+301 pp. (Murray.) 7s. 6d. net.

the real Greek type is Sophocles." This is well said. Continually, too, Mr. Warren supports his own judgment by the testimony of the soundest critics among the moderns, and such quotations add to the interest and value of his book.

Mr. Algernon Cecil quotes from the late Dean Church a saying that to pass to the Psalms from many a famous book of modern speculation is "like passing into the presence of the mountains and the waters and the midnight stars from the brilliant conversation of a great capital." Though it would be an exaggeration to express the contrast between Mr. Cecil's own book and Mr. Warren's in such terms, the contrast is only a little less striking. For the Vice-Chancellor's comments on literature, whether his own or those which he cites, seldom take us further than "brilliant conversation." Mr. Cecil's is one of those rare books—"the harvest of a quiet eye": quiet but steady, and profoundly penetrating—that withdraw us to a distance from the life of the world, and set us on a height from which we gain a clearer view of the waves of humanity flowing and ebbing and the general movement of mundane things. That note of detachment, which is very far from being indifference, is the most significant quality in these studies of "Six Oxford Thinkers"—Gibbon, Newman, Church, J. A. Froude, Pater, and Morley. The author's view of History is the austere view of Lord Acton, that hers should be the severe justice of a "hanging" judge, not the impartiality of a mind that dismisses moral questions as beside the mark. But he can appreciate the virtues of those from whom he differs. And whilst he devotes to "the failure of Liberalism" a page of the most mercilessly incisive criticism, he can say of Lord Morley, who "embodies more than any living man the principles of a school that is fast dying out," that "No one can lay down any book of his without feeling braced, stimulated, deepened, without becoming more conscious of the nobility of life."

THE CONFERENCE OF HEAD-MISTRESSES.

THE thirty-fifth annual conference of the Association of Headmistresses met on June 11th and 12th at the North London Collegiate School for Girls.

In her presidential address Mrs. Woodhouse, the president, said that she considers it little short of a disaster that teachers cannot to-day claim as a professional body their right to be registered or recognised. As units in the State they count for nothing, are "entered" nowhere, have no official or professional status, do not belong to a fully accredited profession, and this notwithstanding the fact that they are alive to the great importance of registration, for which professional equipment is an essential. She further remarked that no one in the educational world now doubts that anything but gain will accrue to the profession by the realisation of a professional outlook, by the possession of definite educational aims, by insight into the many problems to be faced, and by the attainment of skill and ability to realise a professional horizon. She does not regard the labours of the seven years during which the Registration Council was in existence as wasted. The question of the status of the teacher has been continually before the public mind. The culmination of this experience is the fact that associations, whether of heads or assistants, have made up their minds to have registration.

Later Mrs. Woodhouse urged the necessity for differentiation between the work of the future college girl, the pupil who will proceed either to a university or to a professional career, and the girl who will leave school to take up one of the varied lines of life, either in the home or outside the more defined limits of what is called "home life." In advocating this change, Mrs. Woodhouse does not wish to be considered reactionary—she wants, not a narrower, but a wider and more enlarged conception of the aims of education for girls, and she wants culture behind all educational experiments. For non-college pupils she would substitute for the examination which a university imposes on those who would share in its privileges a test, a school leaving certificate, which would serve as a record of sound education, based on the needs of the many types of pupils in the girls' secondary schools.

During the meeting the following resolutions were passed:

(i) That this conference disapproves of external examinations for girls under sixteen years of age, and invites all members of the association to co-operate in discouraging pupils to enter for them.

(ii) That this conference is of opinion that governing bodies should provide and, subject to parental consent, require medical inspection by a duly qualified doctor in the case of all children entering a public secondary school, and that provision should be made for re-inspection from time to time.

At the meeting on the second day the report of a committee of members who are members of local education committees was adopted. The committee recommended: "That the Board of Education be approached with a view to the modification of (i) the regulation whereby a grant of £2 10s. is paid in place of £7 10s. if the candidate does not pass in the pupil-teacher examination; and (ii) of the regulation which makes the passing of a qualifying examination by a bursar a condition of the payment of the grant of £10 for the bursar's year of instruction in the secondary school."

Resolutions were carried in favour of asking the Federal Council of Secondary School Associations, in conjunction with the National Union of Teachers and the Association of Teachers in Technical Institutions, to call a convention for the discussion of the principles and methods of registration, and of referring to the executive committee the question of communicating with the Board of Education as to carrying into effect the provisions of the Act of Parliament with regard to the Teachers' Registration Council.

A discussion took place on the provision of alternative syllabuses and examination papers in applied science, and the following resolution was carried: "That application be made to the chief university examination boards, the Board of Education, and the local authorities which give examinations in science for scholarships, to receive and consider the science syllabuses of typical secondary schools, and to set papers with a wide range of alternative questions in applied science in accordance with the movement, to give courses in 'home economics' in girls' schools, and other efforts to relate science teaching to life."

Miss Burstall, of the Manchester High School, was elected president for 1909–11.

ASSISTANT TEACHERS IN COUNCIL.

GENERAL meetings of the Associations of Assistant-masters and Assistant-mistresses were held at the end of May, the masters meeting at the Leys School, Cambridge, and the mistresses at the Leeds High School.

The council of the A.M.A. passed a resolution instructing the executive committee to take steps to establish a sickness and accident insurance fund for members, to be managed by the association. A series of resolutions with regard to the Teachers' Register was passed. At the general meeting, the chairman of the association, Mr. W. A. Newsome, of the Stationers' School, Hornsey, London, delivered an address on the work accomplished during the year. During the course of his remarks he said there are obviously two ways of dealing with the problem of the Teachers' Register: settle the composition of the council, and leave the register to its care; or come to some agreement first as to the form of the register, and then constitute the council.

Now we may as well state here, continued Mr. Newsome, clearly and openly, that the profession as such has no use for a one-column register. This huge work, containing some hundreds of thousands of names, would be useless for reference; the general public could not use it, and would not if it could. The old two-column register has failed mainly because of its form; it has accentuated class prejudices, and has undoubtedly caused bitterness, perhaps as justifiable as it is considerable. It is evident, therefore, that the real crux of the situation is the determination of the form of the register, the principles of registration.

The old register failed mainly because it shut up teachers in cast-iron compartments. The plan we advocate for the new register should remove this objection once and for all. By Clause 16 of the Act there must be one register for all teachers. We suggest that to this there be appended sub-registers for special qualifications: (*a*) for primary-school teachers; (*b*) for secondary-school teachers; (*c*) for technical teachers and teachers of special subjects.

At first sight this looks perilously like the old register, but, to quote from the proposed scheme, "duly qualified teachers shall be admissible at entrance, or by transfer, to more than one sub-register." It will thus be possible for a man's name to appear on each of the sub-registers; the primary-school teacher's main objection to the old register will be removed; and we believe that by the mere proposal of such a plan a great step will be taken towards the attainment of professional unity, whether the register ever becomes an accomplished fact or not. We hope great things of this new departure, but we may have to hasten slowly; and I should be rash were I to prophesy that we shall remember 1909 as registration year, a worthy successor to the great year that gave us some security of tenure.

There are some facts so obvious that they are in danger of being disregarded unless we direct attention to them from time to time, and therefore I shall not apologise for once more stating the cardinal article of our belief that the status and well-being of the teacher are of the very first importance to education. The *raison d'être* of the association is stated in our Memorandum of Incorporation to be the promotion of the cause of education by the protection and improvement of the status of the teacher. We have to insist on this out of season and, unfortunately, as at present, in season. The recent action of the Leeds education authorities, and the corresponding attempts at Crewe and Bradford, show quite clearly the curiously subordinate position that the teacher holds in the public regard. With a passing apology for its crudeness, this appears to be the line of argument followed at Leeds.

Is there a balance on the wrong side of the educational budget? Then there must be economies. Which is the easiest of the many ways of practising economy? Repudiate the contracts entered upon by our predecessors. Contracts with builders, and furnishers, and fitters? Certainly not; that is against all commercial morality; besides, these tradesmen might have the law on us. We refer to contracts with teachers. But surely these contracts have a legal sanction? Yes, that is so; but if any teacher protests we will pay him his just due, and then give him a month's notice. Thanks to the sweet simplicity of the law of supply and demand, we can always get cheap teachers.

We have known for many years that one of the chief reasons why our salaries and prospects are so unsatisfactory is the fact that we indirectly contribute to the cost of our pupils' education. The whole machinery of education in secondary schools is engaged in grinding out a £20 training for a £10 school fee. We now learn that for deficits arising from costly extravagances in building, fittings, and apparatus; from pianos, violins, and stained-glass windows; from the foolish and expensive rivalries between education committees, the teacher may be called upon to suffer. It is little consolation to us to be told that some means had to be found of inducing the State to contribute its fair share to the cost of education. The inference is, I suppose, some tribute to our power in the land; squeeze the teacher hard, he will be sure to squeal, and his outcries may bring a paternal Government to the rescue. The end may be laudable, the means are detestable.

Now, moreover, we are likely to be faced with depleted school budgets owing to the multiplication of "free placers." Are the teachers to help pay for these? What a prospect for us. We mourn our lost increments; what shall we do in the day of decrements? A certain alderman at Bradford is reported to have said that he knew a school, where there were 166 scholars in average attendance, that was costing in teachers' salaries £700 a year. "If other members of the council were satisfied with that state of things, he was not." There are, presumably, some 200 children on the registers, so that this expenditure works out at £3 10*s*. per head, say fourpence a school day. Now I ask you, as a meeting of experts, is it humanly possible that any child can get fourpennyworth of good, mental, moral, and physical, from our daily ministrations? Our alderman evidently thinks not. I wonder what school he went to.

The Archbishop of York has recently directed attention to the civic pride, the civic patriotism, of the north of England. But he struck a note of warning when he pointed out that where there is no sense of civic pride local government sometimes drifts into the hands of self-seeking, or at least inadequately educated, men. If we really wish to see education raised to its proper plane and take its proper position in the national life, we shall have to discard that aloofness from politics so dear to some of us. We must cultivate the civic virtues in our pupils, develop the growth of civic pride, and, if necessary, take a more active share in local politics. If we fail to do this the future of the children will be left, as it so often is now, to the irresponsible amateur, the man with an axe to grind, and the self-made man, to whom the end of education is merely a livelihood. As it is, the ultimate control of secondary education at the present time seems to lie between the more or less gifted amateur

on one hand and the bureaucratic Board of Education on the other. To me, the action of the Leeds authorities provides a strong argument in favour of the bureaucratisation of education—the evolution of a finished scheme of complete State control.

Enthusiasm, cheerful, whole-hearted, unfashionable enthusiasm, is the *sine qua non* of success in our work, and we all acknowledge it. But it is difficult for the normal man to get up enthusiasm for an occupation, however noble in itself, which provides for barely more than necessaries, which does not allow for provision for old age and the future. As it seems difficult to get adequate reform in the matter of salaries, adequate and universal, we are concentrating our efforts on the establishment of a superannuation fund which shall apply to all secondary schools. It is gratifying to be able to report to this meeting the sympathetic hearing given by Mr. Runciman to our hon. secretary's lucid exposition of our plan, as defined in the resolutions of our January meeting. It will be as well, perhaps, to remind you that we ask for no grant from the Treasury. Further, it is significant that in some of the newest schemes for secondary schools the Board of Education accepts the principle that the governors may become contributories to funds for providing pensions for their teachers, both head and assistant.

During the meeting following the chairman's address a resolution was passed with regard to the recent action of local education authorities on the question of teachers' salaries. The resolutions passed by the council on the subject of the Teachers' Register were unanimously approved. The resolutions are not to be taken as a final expression of opinion on the part of the association, but as having been drawn up to assist the executive committee in future discussion.

A paper by Mr. G. Warre-Cornish, of University College School, London, on the specialist or form systems in secondary schools, concluded the meeting.

We referred briefly to the meeting of the Assistant-mistresses in our last issue (p. 230), and are glad to take this opportunity of supplementing the previous note. In her short paper on a register for teachers, Miss Laurie, of Cheltenham Ladies' College, reviewed briefly the history of the movement for registration since 1899, and showed in what particulars the old register had failed to satisfy the teaching profession as a whole. She quoted the clause in the Education Act of 1907 which makes it "lawful for his Majesty by Order in Council to constitute a registration council representative of the teaching profession," and went on to show how difficult it was to draw up a constitution for a registration council which should satisfy all sections of the teaching profession. In the discussion that followed, the value—if any—of a register kept by the teaching profession was debated, but the meeting declared itself strongly in favour of a register kept by the State.

The president, Miss E. M. Bancroft, Redland High School, Bristol, gave an account of the work done by the association during the year, and Miss E. G. Skeat, the Queen's School, Chester, who represented the association at last year's Moral Education Congress, presented a report and dealt with the bearing of the congress on the work of schoolmistresses.

Simple Lessons on Household Management. 128 pp. (Blackie.) 8d.—These lessons contain a great deal of useful information, plainly and sensibly set forth. They would form a suitable text-book for classes in domestic economy, laundry-work, and kindred subjects.

TECHNICAL EDUCATION AND SECONDARY SCHOOLS.[1]

By J. WILSON, M.Sc.
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DURING the period 1885–1900, one of the most marked features of educational work in England was the development of technical education, due largely to the financial assistance given by local authorities in accordance with the Technical Instruction Act of 1887. Many new institutions were built, new subjects of instruction opened out, and some attempts made to found a definite system of technical education. Needless to say, many blunders were made and much money wasted, but the experience gained was to bear fruit in later years.

After the Act of 1887, the next landmark in the history of technical education was the Act of 1902, which placed all forms of education under the control of the local authorities. The first deficiency to be remedied by these authorities was the lack of provision for secondary education. As a result of the special attention rightly given to the pressing claims of secondary education, the needs of technical education dropped into the background for the time being. Now this deficiency in secondary-school accommodation has been largely made up, and the country is covered with a network of more or less efficient secondary schools. These schools are, or should be, clearly intended for the bright boys and girls from the lower middle or working classes. To this end the fees are generally low, although the recent tendency to charge increased fees is one which needs carefully watching by all believers in a democratic system of education. Against the present curricula of these schools many objections might be raised. Considering that about 80 per cent. of the workers of this country are engaged in trades or industries, the curricula and main object of these schools should be such that, while continuing the general education of the pupils, special regard should be given to the future livelihood of the pupils. When first established these schools carried on, to some extent, the scientific traditions of the old "science day schools," giving a more or less valuable general training for those destined to pass afterwards into engineering, building, electrical and chemical work, or direct to the technical institutions. In recent years, as a result of being examined and controlled by the secondary branch of the Board of Education, their scientific and technical bias has almost entirely disappeared. Concurrently, their "vocational" value, except to those pupils who are endeavouring to enter the teaching profession or the lower ranks of the Civil Service, or to become clerks, has almost reached the vanishing point.

We need two distinct groups of secondary schools, one corresponding to the "grammar school" type and preparing for the universities or the learned professions, the other definitely preparing the boys (and girls) for commerce, scientific and technical industries, trades and crafts. This group of secondary schools covers the types of schools generally known as day technical schools, commercial schools, trade schools, craft schools, and the like. In all of these the general education of the pupils should be continued, along with the definite training intended to be of value when the pupil enters upon the struggle for

[1] From the presidential address to the Association of Teachers in Technical Institutions at the annual conference held at Liverpool, May 29th to June 2nd, 1909.

existence in the industrial arena. At the present time many parents are willing, even at considerable self-sacrifice, to keep their boys at school until sixteen years of age, but they feel it is almost useless sending their boys to the present secondary schools if the boys are destined for technical or industrial pursuits.

One of the weaknesses of English technical education, due to the lack of educational organisation on a national basis, is that most of our technical institutions are too closely modelled upon the same pattern. Neighbouring institutions are too often trying to do almost exactly similar work, resulting in much educational and financial waste. Co-ordination between adjacent institutions is apparently prevented by strong local rivalries. Further, some institutions are attempting too many different types of educational work. Thus, in one and the same building, using the same equipment, and utilising the services of practically the same staff, we may find a secondary day school, a day technical college, trade school, day university courses, and evening technical and university courses. The inevitable result is that the efficiency of certain portions of the work suffers. From a purely financial point of view, this concentration of work in one institution is perhaps satisfactory, but a temporary economy does not necessarily spell educational efficiency.

One cause of this bewildering multiplicity of work often attempted by technical institutions is the lack of clear conceptions respecting the objective and methods of technical education. If we tentatively regard technical education as that branch of educational work which is training students directly and primarily for "vocation" or "livelihood," we have two main problems to consider: (*a*) the training of the boy or girl from thirteen to sixteen or seventeen, and (*b*) the training from sixteen or seventeen years onwards. A certain complexity will necessarily be introduced by the different conditions in small and large aggregations of population. It may be suggested that in the small towns the day work of the technical school should be that indicated by the titles "Trade" School or "Technical-Secondary" School, which of the two forms to be selected being determined by local conditions. In some towns both types of work will be provided for. It is understood, of course, that at these schools the fees should be low, and that there should be a generous provision of scholarships with maintenance grants. These schools must link on directly with the elementary schools. At the age of twelve or thirteen the boys intending to enter industrial work should be transferred to these trade or technical-secondary schools, and arrangements should be made whereby the more promising boys should be able to pass on at the age of sixteen by means of scholarships to a suitable day technical institution, probably that in a neighbouring large town. The technical institutions in the large towns should be of two distinct types, termed, broadly, trade schools and technical schools, or technical colleges or polytechnics. The day work of the former of these types will be similar to that indicated above for the technical school of the small town. In these trade schools in the large towns the evening work should be of a technical evening continuation school character, the curricula to be of direct educational and industrial value, co-ordinated with, and leading up to, the evening work of the technical school or polytechnic, the management of which should also have control of the trade school. The technical schools or polytechnics, of which there should be one for each group of towns or large centre of population, should restrict themselves in the day-time to students from sixteen years onwards. The instruction given should be of that high standard which would be designated briefly as "university standing." The day technical school or polytechnic work must be regarded as being on an equal level with the ordinary university colleges. Further, there must be some measure of co-ordination of the work of these technical schools or polytechnics to ensure a high measure of specialisation without unnecessary overlapping.

Pending the establishment of some scheme similar to that outlined above, there is one possible reform of great urgency. By common consent, the organisation and curricula of the present evening continuation schools, save in a few towns, are very unsatisfactory, judging by such pupils as afterwards pass on to the evening technical schools. The evening continuation schools, for boys engaged in trades, industries, or crafts, should lead directly to the technical school. The curricula for such boys should be mainly English, arithmetic, drawing, and some elementary science. Above all, the work should be serious and strenuous. The school must not be merely a feeble competitor with the cheap music-hall. It should have a definite educational aim, and the staff should be encouraged to teach, and not be incessantly harassed by the necessity of keeping up the average attendance for fear the school should be closed. The principal feature of the organisation of the school must be the co-ordination with the technical school, the authorities of which should have a direct, if not even a controlling, voice in the management, curricula, and appointment of the continuation-school teachers. Further, the latter should be, so far as the scientific and technical subjects are concerned, technically trained men, and not elementary-school teachers. Here there are undoubtedly important interests at stake; but the technical education of the country is too serious a matter to be hindered by such considerations.

Another vexed problem respecting evening continuation schools is whether attendance at evening schools should be compulsory for all boys and girls between the ages of fourteen to seventeen who are not attending secondary or technical schools in the day-time, subject to the limitation of the hours of labour of boys and girls between the ages specified. On the other hand, would it be better to be "educational whole-hoggers" and press for compulsory attendance for these boys and girls at day technical or trade schools for a given number of hours per week? Either of these proposals, if adopted, would represent a great educational advance, the latter—*i.e.*, attendance at day classes—being clearly preferable. It would probably be better policy to support the larger of the two proposals, on the general principle that "he who aims at the moon is likely to shoot higher than he who aims only at the tree."

HISTORY AND CURRENT EVENTS.

The circular from Southampton to which we directed attention last month spoke of the Pilgrim Fathers of New England as Puritans. If Prof. Hearnshaw will permit us, we would point out that the voyagers in the *Mayflower* were somewhat different from Puritans, and, indeed, had controversies with them. Puritans were members of the Established Church who wished further to purify that Church of what they regarded as remnants of Popery, but who remained within it, and whose clergy retained their livings if they could. The Pilgrim Fathers were some of those who, as early at least as the beginning of

Elizabeth's reign, separated from the Established Church on the ground that it was impure, and that therefore it was their duty to come out from it. At this distance of time these differences may appear unimportant, and the two parties may be regarded as but the right and left wing of the ultra-Protestant movement; but at the time the differences were very real. The Puritans may be compared to a Parliamentary Opposition, the Separatists to rebels against an established Government.

On St. George's Day last (April 23rd) "at Lichfield the ancient Court of View of Frankpledge and the Court Baron of Burgesses within the Manor and City assembled at noon, the Mayor, as lord of the manor, presiding. . . . A jury was sworn in the usual manner, and various appointments were made." Do our readers need to be told that "view of frankpledge" is a national institution dating back to early English times? that "courts baron" are manorial institutions which were probably in existence, though not known by that name, before the Norman Conquest? Perhaps, also, they know that a mayor is not necessarily a lord of the manor, and that juries are a feature of our constitution introduced by the Normans. View of frankpledge and courts baron are now only interesting survivals, their functions having long ago been taken over by later institutions; and we suspect that the dinner, which ended the proceedings, was the most important event of the day. But evidently Lichfield, with its memories of Offa's archbishopric and of Dr. Johnson, is rich in historical associations.

FORTY years ago the European world was very hopeful. The two countries on which the Holy Roman Empire of the Middle Ages had lain like a burden, Germany and Italy, were separated at last one from the other, and were achieving internal unity. Nationality, the principle which had been evolved during the Napoleonic wars, was achieving its greatest triumphs, and when in 1871 the German Empire and the Italian kingdom were completed all felt that Europe had at last attained a position of equilibrium, and that there might now be peace and prosperity. That hope has been proved illusory. "The end is not yet." States are like circles. They have a convex as well as a concave side. The nations, being full grown, have become rivals, and the world to-day is full of conflict, if not actual yet possible. We read almost daily of rival tariffs and rival navies, and even the latest advance of science, the conquest of the air, is being pressed into the service of war.

AGAINST this rivalry of States, which has produced, if not actual war, yet a condition of armed peace, Hague conferences seem to have failed. They serve merely as the judges in a mediæval trial by battle, and provide no more than rules by which the contest shall be guided. But the monarchs of the nations visit one another, commercial and ecclesiastical bodies fraternise in each other's countries, and some political parties declare they are opposed to militarism and the war of the nations. We have received lately a bundle of pamphlets from the United States, written by men of position and influence there, pleading for international conciliation. There have always been such men throughout the ages, and since the beginning of last century there have been, especially in America, societies working in various ways for international peace. Which is the way to attain this? To arm more and more until war is practically impossible, because it would be ruinous to both belligerents, or to disarm and submit to "peaceful solutions"?

ITEMS OF INTEREST.

GENERAL.

THE Educational Science Section of the British Association will assemble during the Winnipeg meeting on August 26th in the Senate House of the University of Manitoba, under the presidency of the Rev. Dr. H. B. Gray, Warden of Bradfield. After the president's address a discussion on "Moral Instruction in Schools" will be opened by Prof. L. P. Jacks, who will be followed by Mr. Hugh Richardson and, it is hoped, by representatives of the American Association for the Advancement of Science. August 27th will be given up to a discussion on "Practical Work in the Schools," which will be opened, on behalf of the special committee of the section which is now considering the subject, by Mr. W. M. Heller. Dr. C. W. Kimmins, vice-president of the section, will contribute some account of the London trades schools. Mr. J. G. Legge is expected to speak on "Practical Work in English Industrial Schools," and Mr. W. Hewitt, director of technical instruction in Liverpool, on "Practical Work in Evening and Continuation Schools." August 30th will be devoted, probably, to a joint meeting with the Geographical Section of the Association on "Practical Work in Geography Teaching." Prof. R. Dodge, of Columbia University, and Mr. G. G. Chisholm, of Edinburgh University, are expected to contribute papers. On August 31st the president of the section will open a discussion on "Education as a Preparation for Agricultural Life," with special reference to the public-school boy in Canada. Following out the practice of previous years, arrangements will be made for visits in the afternoons to various institutions of educational interest in Winnipeg and neighbourhood.

SOME weeks ago it was circulated widely in the Press that the University of London had agreed to recognise the Matriculation examination of the Northern Universities as giving exemption from the London Matriculation examination, and *vice versa*. We are informed officially that this announcement was unauthorised, but that such recognition has now received the formal approval of the Senate of the University of London.

TEACHERS of modern languages will be glad to learn that Prof. Rippmann proposes to deliver in the autumn a short course of lectures on teaching methods. There will be five lectures between October 2nd and November 27th on phonetics, in which the sounds of English will be made the basis, French and German sounds being compared and contrasted; and five lectures dealing with methods of modern language teaching. It is intended that the lectures shall be of direct use to teachers in their daily work, and there will be opportunities for the discussion of difficulties. The lectures will be given at Queen's College, 43, Harley Street, W. All communications about these lectures should be addressed to Prof. Rippmann (at 45, Ladbroke Grove, London, W.), who will, we understand, only deliver the lectures if there is a sufficient demand.

THE governors of the Chichester High School for Girls, which has been erected by the West Sussex County Council at Chichester, and will be opened in a few months, have decided that the fees for pupils between ten and twelve years of age shall be £9 9s. a year, and £12 12s. for pupils of twelve years of age or above. The school has been approved by the Board of Education, so that the fees and the State grant should almost make it self-support-

ing, provided a sufficient number of pupils is obtained. In any case, the experiment of establishing a school of high educational type and reasonable fees for pupils who propose to pursue their studies to the completion of a secondary-school course will be watched with interest. In an agricultural district like that of which Chichester is the centre, there is practically no demand for cheap secondary education, that is to say, for schools in which the fees are £3 or £4 a year. If such fees were insisted upon by the Board, the result would be much the same as that just condemned at Bradford, where 38 per cent. of the pupils in the municipal secondary schools leave at fourteen years of age or under. We are strongly in favour of making secondary education available to all who are capable of taking advantage of it and will stay at school until at least sixteen years of age, but we consider it a waste of public money to carry on secondary schools for pupils who will only remain in them for a year or two. For the sake of educational efficiency and of adequate salaries, we trust that the policy of the West Sussex County Council, in making the fees of the Chichester school high in comparison with those of other secondary schools in which free places are provided for pupils from elementary schools, will prove successful.

A SUMMER school of pedagogy is to be held from August 2nd to August 14th inclusive at Highgate. The programme includes lectures on "The Psychology of the Child," by Dr. J. W. Slaughter; on "Special Methods of Instruction," by Miss M. E. Findlay; on "Arts and Crafts," by Mr. and Mrs. J. C. Hudson; on "Nature-study," by Miss E. Christine Pugh; and on "The Development of London," by Mr. S. K. Ratcliffe. The lectures will form but a small part of the work, occupying about two hours a day, the rest of the time being devoted to excursions, practical work, and demonstrations. Dramatisation as an educational instrument for the teaching of history and literature to children between the ages of five and fifteen will form one of these demonstrations. Further particulars may be obtained from the secretary, Highgate Vacation Course, The Home School, Bishopswood Road, Highgate, N.

AT the annual general meeting of the Teachers' Guild, held on June 10th, the following resolutions were carried: (i) That this meeting requests the council to appoint a committee that shall consider the conditions upon which it is desirable that State grants be made to efficient private schools, both elementary and secondary, and shall make suggestions as to the definition of the term "efficient private school," the said committee to report not later than the next annual meeting, and as much before as possible. (ii) That this meeting reaffirms the view of the Teachers' Guild that every head and assistant in a school under scheme should have a right of appeal, in case of dismissal, to the Board of Education. (iii) That this meeting reaffirms the following resolutions, carried at the annual general meeting of the Guild in 1906, viz.: (*a*) that in schemes for schools the clause providing for dismissal of a headmaster without cause assigned should be expunged; (*b*) that in such schemes the clause entitled "Declaration of Headmaster," whereby he acquiesces in his own dismissal, should be expunged.

AT the recent annual conference of the Association of Teachers in Technical Institutions, held at Liverpool, the following resolutions were adopted: (i) The preliminary training which students receive at present before entering technical institutions is not such as to fit them for benefiting by the instruction provided. To improve this, the following reforms are desirable: (*a*) no child should be allowed to leave school before the age of fifteen, and the half-time system should be abolished; (*b*) in the education of children attending elementary schools special attention should be directed to the teaching of practical arithmetic, elementary science, and manual training. (ii) (*a*) The evening continuation schools should be affiliated to the higher institutions in their respective districts. (*b*) The curricula of the evening continuation schools should be arranged in conjunction with the authorities of the higher institutions, who should have the right of entry or inspection. (iii) Admission to technical schools should, in general, be conditional on the student having reached a standard of education to be fixed subsequently. (iv) (*a*) The work of the secondary schools should be divided into three branches, viz., technical secondary schools (including trade schools), commercial secondary, and classical secondary. (*b*) There should be a properly graded system of scholarships, with maintenance, available at these schools. (v) This association heartily approves of the general principles embodied in the following recommendations of the Minority Report of the Poor Law Commissioners: "It should be illegal to employ boys below the age of fifteen, or any youth below eighteen, for more than thirty hours per week, and boys should be compelled to attend some suitable public institute giving physical and technical training for not less than thirty hours per week at periods to suit the convenience of employers in different industries."

THE report of the committee of the Cambridge University Day Training College shows that in 1907 there were in the department for the training of teachers in secondary schools seven students in the Michaelmas, eleven in the Lent, and eleven in the Easter terms. Six students obtained the certificate of theoretical and practical efficiency. In the year 1907–8 nineteen students left the college after a course of training for three years. Of these, all, excepting one who was impeded by illness, have taken degrees, and all but three have taken honours. Of these, six have gained first classes and seven second classes, a percentage of first and second classes probably larger than that of any college at Oxford or Cambridge. On the professional side, nearly all these students were awarded last Christmas the diploma of the University of Cambridge in the theory and practice of education.

A PROSPECTUS has reached us of a holiday course at Salzburg, the beautifully situated capital of the province of that name standing at the entrance to Tyrol. The course opens on September 1st and closes on September 15th, but the lectures are divided so that either the first or second week may be taken alone. Many interesting subjects will be dealt with by distinguished professors of philosophy, history, and natural science. Copies of the programme can be obtained from Herr Max Swatschek, Ludwig Viktorplatz 5, Salzburg, Austria.

A LETTER circulated by the honorary secretary of the National Association of Teachers of the Deaf contains a useful test of a pupil's power of hearing. The letter points out that it sometimes happens that a partially deaf child can follow lessons if he is placed in the front row of a class, while he would fail entirely to do so at a greater distance from the teacher. A simple test, which can be applied by any teacher, is to place the child with his back towards the speaker, begin to dictate some easy sentences unknown to the child, ask him to repeat them; and then gradually step away from the child until from

ten to twelve paces away, and if he cannot at that distance correctly repeat the words dictated to him in an ordinary tone, he is too deaf to profit by the instruction in the school. But even if he pass this test, it should be repeated from time to time to ascertain whether the deafness is increasing.

MR. MARSHALL JACKMAN, vice-president of the National Union of Teachers, speaking at Bath on June 12th, said educationists maintain that too little is spent on education in this country, while ratepayers say that too much is spent on it out of the rates. Both statements, he contended, were true. Education is undoubtedly a national service. Few educationists would like to see the local control of education entirely eliminated; with local control there must be local charges. The vexed question requiring settling is the question of the proportion of these local charges. According to the latest figures available, elementary education costs 21½ millions, of which 11¾ millions are supplied by grants from the Exchequer. The remainder comes from local rates, fees, endowments, &c. Large as these grants from the Exchequer may appear, they are, Mr. Jackson contended, quite inadequate and very badly allocated. Although imperial grants for elementary education have more than trebled themselves during the last twenty years, the grants to-day afford less effective relief to the ratepayer than they did twenty years ago. The additional grants have only replaced decreases of income on other sources, or have been swallowed up by the cost of added responsibilities imposed on localities by Parliament and an increased school population. The total amount of annual subject grants in 1886 was £2,988,228, and in 1907 they had increased to £5,670,773, but the average attendance of the children had increased from 3,438,425 to 5,303,229. The fee grant gives no effective relief to the ratepayer, but relieves the parents from the payment of fees—in fact, the total amount received to-day by local authorities in fees and fee grants is less per head than the fees were in 1895. The present Budget gives indication of large surpluses in the future. The public should insist, said Mr. Jackman, that some of this money should go in relief of local education burdens; but not only is more money required, but a distinct alteration in the method of allocation of grants. The central aid should (i) relieve the localities substantially, (ii) reduce inequalities, and (iii) encourage improvement.

A FEW weeks ago H.M. the King signed the warrant for granting a charter establishing the University of Bristol. This city, with a population of about 360,000 people, is the natural home for a university to provide for the educational needs of the six western counties with a total population of nearly three millions. By the creation of the University, Bristol is brought into line with Manchester, Birmingham, Liverpool, Leeds, and Sheffield, where universities have been established in recent years. Women are to be eligible for any office in the University and for membership of any of its constituent bodies, and all degrees and courses of study are to be open to them. The Town Council has decided to contribute in the proportion of one penny in the pound on the rate, or about £7,000 per annum, toward the support of the University, and more than £200,000 has been subscribed for the endowment, mainly by members of the Wills family.

FEW things add more to the interest of lessons in geography than reproductions of photographs taken by explorers during their travels and the *ipsissima verba* of their accounts of new countries and new peoples. For these and other reasons no teacher can afford to neglect the monthly issues of *Travel and Exploration*, published by Messrs. Witherby and Co. The June issue teems with information and informal aids to teaching. Especially noteworthy are the articles by Colonel Sir T. H. Holdich, K.C.M.G., on unexplored Central Asia, with its full-page map and beautiful process pictures, and Dr. Oscar Bongard's account of Herr Dernburg's tour in South Africa. The other contributions range over a large part of the world. We are sure the majority of boys and girls would welcome enthusiastically the appearance of our contemporary on the table of the school reading-room.

A COPY of the 1909 edition of the "ABC Guide to the Highlands of Scotland," issued by the Highland Railway, has reached us. It occupies upwards of 200 pages, and anticipates every piece of information the teacher intending to visit the Highlands is likely to require. The guide provides descriptions of the routes traversed by the Highland Railway from Perth in the south to John o' Groats in the north and Skye in the west. Lists of open fishings and golf courses in the Highlands with descriptive notes are supplied, as well as a series of upwards of 100 tours by rail, coach, and steamer. Special tourist fares from practically all railway stations in England and Wales to every station on the Highland line are available. The book is illustrated by a series of excellent photographic reproductions of beauty spots in the Highlands. The guide may be had post free on application from Mr. T. A. Wilson, general manager, the Highland Railway, Inverness, or from Messrs. W. T. Hedges, Ltd., Effingham House, Arundel Street, Strand, London, W.C.

SCOTTISH.

A SPECIAL meeting of the Classical Association was held in Edinburgh University to consider the report of the committee on the curricula of secondary schools and the regulations for the award of intermediate and leaving certificates. The feature of the meeting was the unanimous and unqualified condemnation of the rigidity of the present intermediate course. Attention has been directed repeatedly in these columns to the grave injury being done to Scottish scholarship by the uniform, or almost uniform, curriculum demanded for this particular stage. In the supplementary stage and in the post-intermediate stage ample freedom is granted to arrange the curriculum to suit the needs of the various classes of pupils, and why the intermediate stage alone should be selected for a display of departmental imperialism is what no one understands. In consequence, the study of German and Greek in Scottish secondary schools is fast reaching vanishing point, and it only remains for the Department to give it decent burial by proscribing them altogether. A speedy death would be preferable to their present moribund condition.

SOME months ago the Department indicated its intention to revise the regulations governing the award of leaving certificates, and its willingness to consider any suggestions thereon from teachers and managers of schools. Apparently the appeal for expert advice has not been responded to largely, as the Department has issued to the managers of secondary schools a further circular calling for "particulars of the post-intermediate course or courses which, in view of the greater liberty of action now to be accorded, and in view also of the resources of the school staffs, might reasonably be made the bases of the award of the

leaving certificate." It is satisfactory to find the Department in this eminently reasonable mood. Apparently there is no intention to impose on the post-intermediate stage the cast-iron rigidity of the intermediate course, and teachers, having obtained the liberty for which they have long been crying out, may be trusted to introduce as much variety into their school courses as the aptitudes of their pupils demand and as the exigencies of school staffs allow. It is unfortunate that the Department has not given teachers and managers longer time for the preparation of their replies, which have to be forwarded within sixteen days of the date of issue of the circular. Still, with the holidays coming on, the matter is urgent, and teachers at least should have their minds pretty well made up in regard to the courses they are able to provide.

THE junior student system has been in existence such a short time that surprise has been expressed in certain quarters at the Department's recent circular outlining radical changes in the curriculum. But it has to be remembered that the present curriculum was admittedly experimental and tentative, and that the demand for its revision has been approved by practically all teachers who have had anything to do with the system. The new proposals concede the two main demands of the junior student centres, a greater freedom in the selection of subjects and a reduction in the number of subjects required. After fulfilling certain minimum requirements, the individual student is to be free to follow studies for which he has particular liking and aptitude. The circular is notable for the stress it lays upon a thorough training in English, or rather the study of literature in and through English. In this connection attention is directed to the value of standard English translations of foreign masterpieces. It is contended that a knowledge of the "Odyssey" acquired in this way might easily count for infinitely more than the mere ability to spell out laboriously, with the aid of a lexicon, two or three hundred lines of the original text. For the study of English, together with the closely allied study of history, it is intended to demand a minimum allowance of seven or eight periods a week.

BY Section 16 (2) of the Education (Scotland) Act it is provided that, after certain payments have been made from the Education Fund, the balance is to be allocated among the thirty-nine committees on secondary education for the promotion of education in their respective districts. The scheme of allocation is to be framed so "as to give greater aid to those districts where the burden of expenditure on educational purposes is excessive as compared with the valuation of the district." The scheme has to be laid on the table of both Houses of Parliament, and to be approved by Order in Council. Unfortunately, a grave division of opinion has arisen between the different secondary committees as to the principle of allocation. The Department, with a strange want of foresight, has issued two schemes of allocation. The first has been generally approved by one section of the committees, and the second by the other. The Department, having attempted in vain to reconcile the opposing interests, is now compelled to choose between the two, and has submitted the second scheme for the approval of Parliament. The objectors to this scheme are both numerous and influential, and the Order in Council will not be got without much controversy. They base their case on the ground that the proposed scheme is illegal "as being disconform to the principle of allocation prescribed in the Act."

THE recent Education Act requires the Education Department to formulate, as soon as possible after the passing of the Act, a superannuation scheme applicable to Scottish teachers. One of the sections dealing with the subject provides "that the age of retiral shall, if so prescribed, be different for men and women." With the view of obtaining the considered view of women teachers on this matter, the Educational Institute recently arranged to take a plebiscite of its members (lady). Cards were issued asking them to indicate the order of their preference for each of three courses: (*a*) retiral at sixty-five; (*b*) retiral at sixty; (*c*) retiral at sixty, with the option of continuing in service until sixty-five. Seven thousand cards were sent out, and more than 5,000 replies were received. These show a very strong preponderance of opinion for course (*c*)—retiral at sixty, with option of working on until sixty-five; (*b*) retiral at sixty was the second favourite. The supporters of (*a*)—sixty-five as the retiral age—were in a very small minority indeed. The Department has yet to prepare its scheme, but it can hardly afford to neglect the considered opinion of the great majority of lady teachers for a reduced age of retiral.

IRISH.

THE new Rules and Programme of the Intermediate Board for 1910 have appeared. One naturally turns to the pamphlet to discover what alterations have been made in consequence of the appointment of inspectors. There are none. It remains to be seen, however, whether the Board will now—that is, in the course of the next educational year—put into operation the clause concerning the bonus school grant, which has appeared for several years in the Rules, but has remained a dead letter. Under this clause the normal-school grant may be increased by 20 per cent., or 10 per cent. if, upon the reports of the inspectors, the Board thinks the education in a school is highly satisfactory or satisfactory. But the schools have not yet received any intimation from the Board about inspection.

THE new Rules and Programme contain one or two important alterations from those for the present year. The most striking is the omission of the section under which the two years' preliminary course in experimental science was compulsory on all students of intermediate schools except those who took both Greek and Latin, and girls who took three honour subjects in addition to English. It is difficult to see the reason for this change; but the science courses are now so thoroughly established in the schools that it is not likely to make any difference except in a few special cases.

IN the Programme the chief change is the reintroduction of English literature in all the grades. It was reintroduced this year in the senior grade, and for 1910 is part of the English course throughout. Thus English consists now of two parts, English literature, counting 35 per cent., and English composition, counting 65 per cent. It is curious in how many instances in recent years the Intermediate Board has retraced its steps. This modification of the English course is the latest instance. English literature regularly formed part of the course in English in each grade up to 1907, and then was dropped, to reappear again in 1910.

THE geography courses, which were transformed entirely last year, remain with slight modifications. For the encouragement of Greek in the preparatory grade no set author is prescribed, but Sidgwick's "First Greek Reading Book," exercises 1–44, is substituted. This is clearly for

the benefit of pupils commencing Greek in the preparatory grade year. Another change is the definition of the kinds of Latin prose composition required in the middle and senior grades. In the middle grade it is philosophical and in the senior grade it is historical.

THE cause of grave dissatisfaction with the new Rules is, however, the retention of the rule by which a student is ineligible for examination in a grade in which he has passed already. This first appeared in the Rules for 1909, but, owing to the strong dissatisfaction it caused, it was allowed to remain in abeyance, and hopes were entertained that it would not appear for 1910. It is a most unsatisfactory rule from the point of view of the teacher and pupil, and the joint committee representative of the heads of Catholic and Protestant schools, at a meeting on June 1st, decided to ask the Chief Secretary by a memorial to modify it while the Rules were still lying on the table of the House of Commons, and before they became law. The committee felt it was useless to ask for the Rule to be revoked completely, and proposed that a student should be allowed to pass a second time, but not to earn a grant unless he rose on the second occasion from pass to honours.

THE University Commissioners, under the new University Act, have now issued their statutes for the general government of the National University and its constituent colleges in Dublin, Cork, and Galway. A large number of new degrees is proposed: M.Litt.Celt. and D.Litt.Celt. (Master and Doctor of Celtic Studies); B.Agr.Sc. and M.Agr.Sc. (Bachelor and Master of Agricultural Science); B.Sc. Public Health; D.Sc. Public Health; B.D.S., M.D.S. (Bachelor and Master of Dental Surgery); B.Arch., M.Arch. (Bachelor and Master of Architecture); B.Comm., M.Comm. (Bachelor and Master of Commerce). The University faculties are to be eight in number: arts, philosophy and sociology, Celtic studies, science, law, engineering and architecture, commerce, medicine. The treatment of Celtic was awaited with much interest; it is largely endowed and is given great prominence, so that it seems as if it will be encouraged generously, but not made a compulsory subject. Celtic studies are represented by seven professorships or readerships, under the headings of archæology, art, history, Irish music, philology, Welsh and other Brythonic languages. In order to obtain a degree in the new University it will be necessary to be in residence nine terms and to pass two university examinations. The Dublin college will naturally be endowed more largely than those in Cork and Galway. The chief difficulty is to find a suitable site, and an advertisement has appeared in the Dublin papers asking persons who are willing to let or sell property which is likely to be suitable to communicate with the new president of the Dublin University College.

THE Department has issued the programme for the session 1909–10 of the Irish Training School of Domestic Economy, together with the papers set at the last examination for admission to this school. The school has removed out of town, and is situated at St. Kevin's Park, Kilmacud, Stillorgan, co. Dublin, in premises of about three acres, about one and a half miles from Dundrum railway station.

THE Department has also published an interesting inquiry made by Mr. F. C. Forth, director of technical instruction, Belfast, into the number of students of different ages enrolled in the classes of the Municipal Institute in that city, with the view of showing how small a portion of the available population avails itself of its opportunities and making suggestions as to possible improvements.

WELSH.

THE Court of the University of Wales has had before it the idea of establishing a Board of Legal Education for Wales and Monmouthshire in association with the Law Society of the United Kingdom. The objects of the Board will be "to promote within its area education in legal subjects, including courses prescribed for university degrees and special courses of legal education for articled clerks; to raise funds in aid of such education, and, subject to the approval of the council of the Law Society, to make representations to the council with reference to matters of legal education in Wales and Monmouthshire, and the application of such grants as may be made therefor by the council." Ultimately, a committee of the Court of the University was appointed to confer with the representatives of the Law Society and promoters of the scheme, and to report to the next meeting of the Court.

THE Court of the University further decided to establish research degrees in law (LL.M. and LL.D.), and adopted statutes for this purpose. The degrees will be granted on the same lines as the research degrees in arts and sciences (M.A. and D.Litt. and M.Sc. and D.Sc.). Suggestions were also made for the regulations of the present degree of LL.B. to make it possible for a student who has passed the Matriculation examination at a higher standard in certain subjects to be admissible to complete his examinations in three years' residence. It was decided to forward these suggestions to the Senate.

THE first annual meeting of the Welsh Federation of Education Committees has just been held at Llandrindod Wells. A resolution was passed asking for the postponement of the operation of the new regulations affecting the staffing of public elementary schools and the size of classes pending increased grants being given. A resolution was also passed giving local authorities power to lodge children from mountainous districts, temporarily, near schools, and a further motion was passed appealing for a considerable extension of time for the repayment of loans for the purposes of new school buildings.

THE report of Mr. Reginald Blomfield, the assessor nominated by the president of the Royal Institute of British Architects, on the six designs selected for the limited competition to secure an architect for the permanent building of the Welsh National Library at Aberystwyth, has been received. The design chosen was that of Mr. Sidney E. Greenslade, of London.

THE Flintshire Education Authority has published the report of Dr. A. E. Williams (the schools medical officer) on his inspection of school children from September 1st to December 31st, 1908. The number of children examined was 2,112, of whom 1,117 were boys and 995 girls. Of the children examined, 58·5 per cent. were above the average height and 41·5 per cent. below the average, and 52·1 per cent. were above the average weight and 47·8 per cent. below the average. In 15·9 per cent. the nutrition was poor. As regards cleanliness, the children were in excellent condition. As regards footgear of the children, Dr. Williams writes: "I should much like to see a return to the use of clogs for children. They are cheaper, last longer, and are far more effective in keeping

the feet warm and dry than cheap leather boots." The teeth report is very bad. Of the 2,112 children, 115 had sound teeth, 978 less than four decayed, and 1,019 four or more decayed. As to eyesight, the report states: "The most startling result revealed by the inspection is the appalling condition of the eyesight of the school children, there being no fewer than about 50 per cent. whose vision is one-half the normal or worse." A scheme has been prepared whereby the medical officer is to examine the worst cases, and where necessary prescribe spectacles, for which the parents will be charged contract price. This scheme has been sent to the Board of Education for approval.

AT a meeting of the North Wales Branch of the Mathematical Association there has been a discussion of the circular from the Board of Education with regard to the teaching of geometry in three stages, each of one year, as follows: (i) children to be grounded in fundamental ideas of space, lines, angles, &c., without actual definitions, and accustomed to instruments of measurement; (ii) the acquisition of a number of fundamental propositions, but not in a formal way—*e.g.*, I. 13–15 in Euclid, and some propositions about parallel lines, the equality of triangles, &c.; (iii) rigid deductive proofs to be begun, all fresh propositions being treated as original work like riders. The power of working riders is to be regarded as the only real test of advance in geometry. There was a majority of speakers who agreed with the reader of the paper, Mr. Botting, as to the difficulty of getting the average pupil to work riders. Several expressed their preference for the old teaching from Euclid's text. Mr. Ferguson gave an interesting account of the progress of mathematical analysis, and this subject will be continued at the next meeting on November 20th.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Erckmann-Chatrian, Le Trésor du vieux Seigneur; Le Requiem du Corbeau. Edited by O. H. Prior. vii+93 pp. (Bell.) 1*s.*—This is a volume of Bell's Illustrated French Readers, a feature of which are the good illustrations, which really serve to elucidate the text, and may well be utilised for conversational practice. The editor supplies brief notes, which are generally satisfactory and clearly expressed. A few criticisms may be made: what is meant by the statement "commencer de answers the question 'how long?'" (p. 72)? *Voilà* means literally "do you see there?" not "see there" (p. 72); "to be in vain" is an awkward rendering of "avoir beau" (p. 76); such an absurd form as *Minnæsingers* (pp. 54, 78) might well have been corrected. The vocabulary contains some 350 words; it is not quite obvious on what principle words have been included or excluded: *gauche* is given, but not *droit*; *souhaiter*, but not *soupçonner*; *lit*, but not *fenêtre*; *piège*, but not *ruse*.

P. Mérimée, Tamango. Edited by J. E. Michell. v+66 pp. (Blackie.) 6*d.*—The editor supplies an account of Mérimée's life and works, a clearly printed text, notes and a vocabulary. The notes are full—almost too full; we see little advantage in telling a pupil at this stage that *guère* is derived "from old High German *weigaro*," or that *de* "represents Lat. abl. used after verbs of enjoying." It is not indicated on what principle words have been omitted from the vocabulary; ***vieux*** is given, but not *jeune*; ***six***, but not *cinq*; ***tôt***, but not ***bientôt***; ***quelquefois***, but not *jamais*.

A French Grammar. By H. P. Thieme and J. R. Effinger. ix+411 pp. (New York: The Macmillan Co.) 6*s.* 6*d.*—This book shows that newer methods of modern language teaching are beginning to gain some acceptance even in the United States. It is true that the concessions to the reform are few. Attention is paid to phonetics, but the statements about pronunciation are not always full enough and often shaky. Thus the sound of *oi* is said to be the same as that of *wa* in English *was*, and the sound of *gn* the same as that of *ni* in *onion*. The grammar proper is mainly on the familiar old lines; a quotation from the introduction, referring to verbs, will suffice to show this: "The auxiliary verbs *être* and *avoir*, being irregular, have been placed after the regular verbs where they properly belong, and the irregular verbs, introduced gradually, are given complete in each instance, rather than by detached tenses." Each lesson contains a vocabulary, grammar rules, and detached sentences for translation from and into French, as well as some idiomatic "conversations," with English rendering and phonetic transcript. In the later lessons sections dealing with French history are introduced, and some other connected texts. Seventy pages are devoted to supplementary reading—*i.e.*, two short stories by About and Musset, and four poems. The French-English and English-French vocabularies appear to be complete.

R. Pichot, Pocahontas. (Adapted.) 48 pp. (Macmillan.) 6*d.*—This is a volume of Siepmann's French Series for Rapid Reading. Though it is not stated, we may assume that Mr. Siepmann has adapted the text and supplied the introduction, notes, and words and phrases. The introduction contains a short account of Pichot and of Pocahontas, *la belle sauvage*, whose story has received a melodramatic conclusion at the hands of Pichot. The "words and phrases" contain renderings which it is assumed the pupil will require; but pupils who do not know the meaning of *du moins*, *goût*, *blé*, *demeurer*, *épée*, *fleuve*, and many more given in this section, should surely not be given this text for rapid reading.

Key to the Exercises in Siepmann's Primary French Course. Part I. By C. A. Jaccard. 28 pp. (Macmillan.) 3*s.* 6*d.* net.—We should hardly have thought that any teacher required a key to a beginners' book in French. Those who use Mr. Siepmann's book and require such help will doubtless bless Mr. Jaccard for coming to their aid.

French and English Parallels. By F. R. M. Fursdon. xvi+272 pp. (Methuen.) 3*s.* 6*d.* net.—The author has collected idioms, proverbs and maxims, and supplied English translations in parallel columns and, in the last section of the book, passages from English and foreign authors more or less related in meaning. It seems a pity that the work has been rather carelessly done. The arrangement is inconvenient, and the renderings are often unsatisfactory—*e.g.*, ***en quoi que ce soit***, "in no wise"; ***pencher pour***, "an inclination for"; ***pourra être porté à***, "might extend to." The author prides himself on his classification; but ***donner le change*** appears under Idioms (p. 27) and under Metaphors (p. 104); ***à d'autres*** on p. 4 and on p. 133. Is there no metaphor in ***dévorer des yeux***? Is there a metaphor in *il a l'air d'un chien fouetté*? We do not know to whom such a book could be recommended.

V. Hugo, Poèmes Choisis, 1822–1865. Préface de L. Aguettant. xix+222 pp. (Dent.) Cloth, 1*s.* 6*d.* net; leather, 2*s.* 6*d.* net.—The preface contributed by M. Aguettant is an eloquent, yet sober, appeal to the English reader to judge Hugo's poetry afresh. The selection of poems is very good. The bibliography of books about Hugo is very brief; we are surprised not to find Stapfer's "Racine et Victor Hugo" included in it; few works of French literary criticism are more suggestive to the English student.

Classics.

Elementary Latin: being a First Year's Course. By F. J. Terry. Teacher's edition, containing the necessary supplementary matter to pupil's edition. xvi+102 pp. (Methuen.) 3*s.* 6*d.* net.—In the introduction Mr. Terry lays down some sound principles of teaching: *e.g.*, that the want of style in early stages of Latin does no harm; that learners have to learn how to use the dictionary, and that they should not have one in the first year. On the other hand, he would confine the oral practice of question and answer to the first few exercises, "because Latin is not studied as a spoken language," thus arguing in a circle. Whatever value oral work has at first it continues to have, although it is not so exclusively useful later as at first. In the book itself he gives very full notes of the teacher's part of the lesson which deserve the study of every teacher. Of course, these pages cannot be reproduced bodily by another teacher; but they may guide him. Mr. Terry has evidently thought out his principles with care, and, generally speaking, they are sound. Sometimes, however, he lingers on the edge of an inference without drawing it. Thus he sees that the same thought underlies certain Latin and English words (pp. 4, 5), but does not realise how important it is to link each word directly with the thought, and not let one word suggest the other before it suggests the thought. We think also that confusion must arise if the learner is given the phrase "before the verb" to express subject and "after the verb" to express object (p. 13, &c.). The analysis of verb-forms is very elaborate, and, we think, very confusing, nor is it always right. Thus the tenses on pp. 42–45 are likely to puzzle and make things harder: *e.g.*,

"Am(a)-ē-(o)m = Amem Love-in thought-I.
(E)s-i(e)(o)m = sim In existence-in thought-I."

It seems to us, on the whole, that Mr. Terry has made great progress in the right direction, and that we may all learn from him: but none the less that he should now make the opportunity to see what others are doing, and learn from them. His method needs simplifying and amplifying, and it is unlikely that he will succeed by himself in getting much further, because he has fallen into a by-path.

Caesar's Invasions of Britain. (B.G. IV. 20–V. 23.) Edited, with Introduction and Notes, by A. W. Upcott and A. Reynolds. Vocabulary and illustrations. 120+32 pp. (Bell.) 1*s.* 6*d.*—We need not repeat what we have said before of this series: its size, print, running analysis, grammatical lists, and vocabulary. The subject is a good one; the introduction contains all that is wanted on history and antiquities; the pictures, if often imaginary, are illustrative. But we cannot help once more protesting against such notes as: "exigua parte, &c., ablative absolute, *fere* qualifies *omnia*, *quo genere* which kind (of warfare), *inter se* one another," and the explanations of numerous elementary trifles. We regret greatly that editors persist in producing a type of book which is educationally unsound.

Heath's Practical Latin Course for Beginners. By F. P. Moulton. With a selection from Ovid by J. T. Phillipson. xiv+288 pp. 2*s.* 6*d.* *Writing Latin.* I. Second Year Work. vi+88 pp. 1*s.* 6*d.* II. Third and Fourth Year Work. vi+172 pp. 2*s.* 6*d.* (Heath.)—These three books are planned on conventional lines, and we see little to choose between them and many others. They show, in our opinion, fatal faults, with the rest of their class. Thus they make the material of the exercises dependent on the formal and systematic grammar, without reference to the psychology of the learner. There is no attempt to bring about a relation between the new method of expression and the boy's power of expression already acquired; no hint that such a relation is desirable. The first exercises are not even sentences, but groups of words like this: *tuba agricolae, tuba et hasta reginae, lunae et stellarum, puellae tubā parvā.* The first two of these could not exist except by a paradox; and the third is vicious, since the word *lunae* uttered first should give the impression of a nominative plural, only to be corrected later. The verb is not introduced until after the second declension!

The first Latin writer has glimmerings of sense: thus the grouping of subjects is rather logical than grammatical, possessive dative (*e.g.*) and possessive genitive being placed together; and the abundance of easy sentences is good. But the vocabulary is largely that of Caesar's "Gallic War," which is, for young beginners, a psychological fault. The second book begins with the dependent question and statement, which is well practised in the book. Both include the elements of syntax.

But all three, as we have indicated, suffer from incoherence of thought in the exercises: the chief source of the learner's loathing for his work. And further, the whole scheme implies a separation of what is commonly called "composition" from the reading which will soon, we hope, be regarded as an exploded fallacy.

English.

(1) *Selected Poems of Matthew Arnold.* Edited by H. B. George and A. M. Leigh. (Clarendon Press.) 2*s.*

(2) *The Legend of Montrose.* (Black.) Cloth, 1*s.* 6*d.*

(3) *A Christmas Carol.* (Dent.) 6*d.*

(4) *Gulliver's Travels.* (Macmillan.) 1*s.*

(5) *The Lady of the Lake.* (H. Marshall.) 1*s.* (Carmelite Classics.)

(6) *The Tempest.* Edited by A. R. Weekes. (University Tutorial Series.) 2*s.*

(7) *Pope's Rape of the Lock.* Edited by C. Holden. (Clarendon Press.) 2*s.*

(8) *Vivid Pictures from Carlyle's French Revolution.* (Relfe.) 1*s.*

(9) *Tales from History.* Book I. (McDougall.) 5*d.*

(10) *Suggestive Lessons in English.* Book III. (McDougall.) 2*d.*

(11) *Bright Story Readers.* 1 and 2. (E. J. Arnold and Son.) 1½*d.* each.

(12) *Tales of Old England.* Edited by M. F. Lansing. (Ginn.) 1*s.* 6*d.*

(13) *Royal Treasury.* Part VI. *Tales that are Told.* (Nelson.) 1*s.* 6*d.*

(14) *Old Christmas.* By Washington Irving. Supplementary Reader. (Macmillan.) Sewed, 6*d.*; cloth, 1*s.*

Even in ancient times literary people lamented that

annotated copies of contemporary texts had got into Roman schools; but the shades of Shakespeare, Swift, Carlyle, Sir Walter, and Matthew Arnold must e'en be content. We welcome a short selection of Matthew Arnold's poems (1). It does not mean, we hope, that Mr. George is deserting his special subject, on which we want very much more. The introduction and notes (placed in a new and highly satisfactory position) are excellent, though the map frontispiece seems dragged in; and, if we are to have a map of Oxford, where is Hinksey's maze of streams? Empedocles is rightly omitted; but where is Rugby Chapel? Sir Walter is represented by *The Legend of Montrose*, edited by Mr. A. T. Flux (2), illustrated after the schoolboy's heart; and Dickens's *Christmas Carol* (3), also illustrated, is a wonderful sixpennyworth. *Gulliver* (4) appears well printed in the English Literature Series for Secondary Schools, and *The Lady of the Lake* (5), with a long introduction by Miss C. L. Thomson, is quite a book for the child's own library shelf. The questions are good; but are there enough of them? *The Tempest*, sent by Messrs. Clive (6), is a full, working edition. It is curious to see Miranda described as a "nymph of the sea," and all critics slander poor Caliban. An annotated edition of *The Rape of the Lock* (7) was needed; in the notes is a curious and full account of ombre and spadille; the whole is a scholarly production. Carlyle's *French Revolution* (8) has been abridged by Mr. F. H. Fudge, and will form an excellent introduction to Carlyle *if the young can be induced to read him.*

So much for advanced books: the rest are intended for younger readers. McDougall's *Tales from History* (9) is apparently the first of a series. Profusely illustrated, it should be successful. We wish the same company would do a similar series for older children. The *Suggestive Lessons in English*, Book III. (10), does not belie its title. Messrs. E. J. Arnold add *Tales of Old* and *Long Ago Stories* (11) to the Bright Story Readers, on which favourable comment has often been made. They seem to be a preparatory series. *The Mad Tailor* is done (3*d.*) in the original series. *Tales of Old England in Prose and Verse* (12) is one of the Open Road Library. For quite little children, Pitman's *London Reader* (10*d.*), *The Story of a Cat, The Three Monkeys,* and *Two Parrots,* 6*d.* each (Bell), are all attractive; and Nelson's *Royal Treasury of Story and Song* (13) is, like its predecessors, a fascinating volume for old and young. The Clarendon Press gives us three more of the plain texts, 4*d.* each—*Balder Dead* and *Childe Harold* in two parts.

Of all these children's books, Nelson's *Treasury* seems to come nearest to the ideal book, cheap, well printed, and profusely illustrated by a master-hand. Washington Irving's *Old Christmas* (14), illustrated by Caldecott (Macmillan, 6*d.*), is, like its author, *Anglior quam Angli*; and, as a piece of perfect prose in a perfect setting, unrivalled. And boys *do* like it.

History.

Central Government. By H. D. Traill. Revised and corrected by Sir Henry Craik. x+165 pp. (Macmillan.) 3*s.* 6*d.*—This is a new edition of the late Mr. Traill's well-known manual, first published twenty-six years ago in the "English Citizen" Series. During that quarter of a century many changes have taken place, but Sir Henry Craik has made "comparatively few alterations in the text, embodying the material changes in footnotes." We must frankly say we wish he had adopted another plan, more thorough if less loyal to his predecessor. It is tantalising, *e.g.*, after having read Mr. Traill's chapter on the War Office, to come upon a note at the end which says "it no longer represents the position of matters as modified by the changes of very recent years," &c. What we want in such series is a manual up-to-date in the text, not an account of matters as they were in the time of our fathers. It is also not always clear whether these notes, sometimes referring to "recent events," are by the original author or by the present editor, which is, at least, confusing.

Historical Portraits, 1400–1600. By C. R. L. Fletcher and E. Walker. xxiii+199 pp. (Clarendon Press.) 8*s.* 6*d.* net.—More than a hundred photographic reproductions of portraits of persons famous in the fifteenth and sixteenth centuries in the history of the British Isles are given in this handsome quarto volume. Many of the originals are in the National Portrait Gallery; others are in the hands of private owners, whose permission has been obtained for the reproduction. From the title-page and preface we gather that Mr. Walker is responsible for the selection of the pictures, while Mr. Fletcher, whose books are known to our readers, has written a fairly concise but adequate account of each person whose portrait appears. There is also an anonymous introduction on the history of portraiture in England. "It is not possible to guarantee the perfect authenticity of all the portraits reproduced," but teachers and pupils would be glad to have this book in the school library for delight and profit.

Popular Government. By Sir H. S. Maine. xii+261 pp. (Murray.) 2*s.* 6*d.*—This is a popular edition of a book originally published twenty-four years ago, and based even then on *Quarterly Review* articles by the author. All that Sir Henry Maine wrote is naturally well worth reading, although there are many opinions possible as to the truth of his diagnosis of modern forms of government, and "popular government" has developed much since this book appeared; and the low price of the reprint will make it possible for many to purchase this contribution to modern political thought.

Readings in Modern European History. Vol. i. By J. H. Robinson and C. A. Beard. xx+410 pp. (Ginn.) 6*s.*—This series of extracts from sources is intended to accompany Prof. Robinson's "Development of Modern Europe," which we reviewed last year. Taken in conjunction with that book, the extracts will have much value. Apart from it, they strike one as capricious and disconnected. As the authors say in their preface, "the task of selection involved more complications and difficulties than one who has not attempted it would suspect." Still, the book will prove useful to the teacher of modern European history. The passages which connect the extracts are illuminating, and there is a large bibliography. The period covered by this volume is the eighteenth century and until 1815.

The End of the Middle Age, 1273–1453. By E. C. Lodge. xxii+286 pp. (Methuen.) 2*s.* 6*d.*—We have previously reviewed two other volumes in the "Six Ages" series, to which this volume belongs. Except for a few minor misprints, we can recommend it heartily as a good introduction to the period of which it treats. The story of each nation is treated in turn in an easy and pleasant way, and though there are many facts, they do not overburden the reader. There is an introduction by Prof. Lodge, besides a chronological table, maps, bibliographies, genealogical tables, and an index.

The Intermediate History of England. By W. J. Perry. 12+xli+551 pp. (Relfe Bros.) 3*s.* 6*d.*—This book is an improvement on Dr. Perry's three-volume history. There are not so many quotations with vague references, and on the whole the history is correct; but the following paragraph is curious: "The Netherlands consisted of fifteen provinces which were practically independent: but they paid taxes to the Emperor. The people of the Northern provinces had adopted the Lutheran doctrines. . . ." The story is told in short paragraphs, so that it lends itself readily to a certain kind of preparation for examination. The first twelve pages contain maps and illustrative notes, and there is an index.

Geography.

The Diagram Hand Maps. (Philip.) 1*d.* each.—The Diagram Co. has issued over the signature of Mr. B. B. Dickinson—a guarantee of accuracy—the following new orographical maps: South-West Asia, the Eastern Alps, Greece, the Iberian Peninsula, Switzerland, Russia. They are all good and admirably adapted for test maps, or for the planning of school exercises.

Kent (viii+146 pp), *Essex* (viii+168 pp.), *Surrey* (viii+152 pp.), *Sussex* (viii+144 pp.). By G. F. Bosworth. Maps, diagrams, and illustrations. (Cambridge University Press.) 1*s.* 6*d.* each.—These are four volumes of the Cambridge County Geographies published under the general editorship of Dr. F. H. H. Guillemard. Mr. Bosworth's special work has resulted in four very interesting "readers," from which much geography and not a little local history may be profitably learnt. Each treats of the county's physical geography, its people and their industries and trade, its towns and their antiquities, architecture, and means of communication. Each is prefaced with an admirable map over the safe names of Messrs. Geo. Philip and Son—the only blemish in which is that the physical features appear to stop at the county boundary—and each is closed with a series of diagrams which may serve as samples for similar work on the part of the intelligent reader.

The Edinburgh School Atlas. 10 in. × 7½ in. (W. and A. K. Johnston.) 1*s.*—The atlas contains thirty-two maps of the usual series, but from absolutely new plates. It is therefore up-to-date. Most of the maps are physical, with political boundaries shown in an effective red. The British Isles are inserted, wherever necessary, for comparison. There is also a short appendix of statistics, scales and projections, and there is a good index. The printing is perhaps a trifle small for any but the sharpest of sights.

Observation Lessons in Geography. For Juniors. Second and revised edition. By F. H. Shoosmith. (Charles and Dible.) 2*s.* 6*d.*—Young teachers, or teachers of the young, will find this book of service in suggesting matter and method of lessons on principles of geography. The book is better adapted for use in elementary than in secondary schools; and the course followed in it is substantially that recommended in an appendix to the Board of Education's "Suggestions" for teachers.

Practical Exercises in Physical Geography. By William Morris Davis. 148 pp.; with atlas of 45 plates. (Ginn.) 3*s.* 6*d.*—The Harvard professor of geology has displayed considerable ingenuity in framing this series of "disciplinary exercises" upon real and imaginary topography, and they need no more elaborate apparatus than a note-book and pencils. Some amount of desk-work of the kind is essential for the proper understanding of maps, and, as this course shows, it may give no little help in the realisation of such essentially outdoor subjects as the sculpture of mountains and shore lines and the stages of river development. Whether the method can be employed profitably to the extent here suggested is debatable; but even those teachers who insist most vigorously upon the importance in physical geography of "real" practical work will find these exercises full of good ideas.

Mathematics.

School Algebra. By W. E. Paterson. Part I., 328+(Answers) xxxix pp. Part II., 329–604+(Answers) xl–lxvii pp. (Clarendon Press.) With Answers, 3*s.* each; or in one volume, 5*s.*—These two parts together cover the whole range of algebra so far as the work of the school is concerned. In the writing of the book an effort has evidently been made to meet the demand that in the earlier stages the treatment shall be simple, as free from technicalities as possible, and of a nature that will appeal to beginners by the inclusion of large numbers of easy examples to illustrate the meaning and use of algebraic symbolism. The earlier pages of Part I. show the hand of a practised teacher, and contain plenty of exercises of a useful kind. Chapter xiii. is entitled a "Revision Chapter," and discusses the fundamental algebraic laws; the discussion of these laws is not an easy task, and we think that this chapter is not so satisfactory as it might be made. In the chapter on indices the same sort of logical skill is required as in chapter xiii., and we do not think that it is very prominent. It is a very good feature of this book that pupils are guided in their search for a meaning of a symbol in cases where the original interpretation fails, but it is hard to see that there is any sense in the phrase "1 multiplied by 36 half a time" (p. 268). In Part II. the consideration of the binomial theorem (when the index is not a positive integer) and of the exponential and logarithmic series is preceded by a discussion of limiting values and convergence of series. This procedure is, of course, a sound one, but the discussion of limits seems to us to be marred by looseness of expression. The use of the phrase "infinitely small," for example, is totally unnecessary, and tends to obscure the fundamental character of a limit in the mind of the beginner. Again (Theorem III., p. 447), the products are not "neglected" in any proper sense of the word; the limits of these products (and it is with the limits alone that the theorem is concerned) are zero. We gladly recognise, however, the evident pains that have been taken with the book as a whole; and while thinking that proofs in the chapters specially referred to might be considerably improved, we believe the book can be made the basis of a good school course.

Mathematical Papers for Admission into the Royal Military Academy and the Royal Military College for the Years 1899–1908. Edited by E. J. Brooksmith and R. M. Milne. (Macmillan.) 6*s.*—This collection is too well known to require more than a mere announcement. To many teachers these papers are indispensable, and it is an interesting speculation how far the questions set in the Woolwich and Sandhurst examinations affect the practice of the schools.

The ABC of Bookkeeping. By Lawrence R. Dicksee. x+178 pp. (Longmans.) 2*s.*—It is stated in the preface that this book is an attempt "to map out a course of instruction which, while it is of real educational value as a course of mental gymnastics, will equally be found to be

of some utility in the larger field of business life." So far as we can judge, an earnest effort has been made to carry out the aim thus stated, and the course, if faithfully followed, should do much to develop resourcefulness, while at the same time making the pupil familiar with some of the more important methods of business life.

Notes of Lessons on Arithmetic, Mensuration, and Practical Geometry. By C. W. Crook. Vol. i. vi+170 pp. (Pitman.) 3*s.*—There are many teachers in primary schools to whom these Notes will doubtless prove useful. They seem to have been drawn up by one who has himself taught children on the lines sketched out, and while they do not show any striking originality they are in the main sensible and to the point.

Pitman's Correlated Arithmetic. Books IV. and V., each 56 pp. By T. W. Trought. Each, paper, 3½*d.*; cloth, 4½*d.* Also, *Pitman's Correlated Arithmetic.* Books III. and IV. (Answers, Oral Work, &c.). Each, 1*s.* 3*d.* net. (Pitman.)

McDougall's Girls' Suggestive Arithmetic. Book II. (for Class V.). 80 pp. (McDougall's Educational Company.) Paper, 4*d.*; cloth, 5*d.*

Blackie's Adaptable Arithmetics. Book III. Fractions. 82 pp. Paper, 4*d.* Also, *Teacher's Handbook to Blackie's Adaptable Arithmetics.* Book III. Fractions. viii+105 pp. 1*s.* (Blackie.)

Nelson's Alert Arithmetics. By Henry Wilkinson. Pupil's Book, III., 48 pp. Stiff covers, 3*d.* Teacher's Book, III., 32 pp. Stiff covers, 4*d.*

Earlier parts of all these books have been briefly noticed in The School World (vol. x., pp. 277, 355, 438). In every book there is clear evidence of the efforts that are being put forth to make arithmetic a more interesting subject than it has the reputation of being. It is impossible to decide their relative values, but each is quite good for the object the compilers have in view.

Science and Technology.

The Young Botanist. By W. P. Westell and C. S. Cooper. xxxix+199 pp. (Methuen.) 3*s.* 6*d.* net.—Young botanists seeking for a guide to the identification of the more familiar wild flowers will do well to procure this book. The order followed is that set out in the "London Catalogue"; the descriptions are simple and, so far as we have tested them, accurate, and they are supplemented by a number of capital drawings and coloured plates by Mr. C. F. Newall. The list of species included is far from being complete, but when the selection is made judiciously, as in this case, a beginner's flora is all the better for the omissions. The price of the book is notably low.

Life Histories of Common Plants. By F. Cavers. xvi+363 pp. (Clive.) 3*s.*—This is a thoroughly good introduction to the study of plant life by continuous outdoor and indoor observation and experiment. It is obviously "written round" the syllabuses of the Certificate and Preliminary Certificate examinations of the Board of Education. It is, however, in no sense a cram-book, and it reflects throughout the spirit of the best modern methods of nature-study. The book may be recommended without reserve.

Elementary Botany. By E. Drabble. vi+234 pp. (Edward Arnold.) 2*s.* 6*d.*—Here is another book planned to cover, without appreciably exceeding, the syllabuses of the Oxford and Cambridge Junior Local examinations and the Board of Education's Stage I. examination in botany. Dr. Drabble's treatment of his subject is sound and conscientious, and if the book shows but little originality it has the merit of being trustworthy. We doubt whether the author's plan of introducing so many points of physiology before describing the modifications of organs is a wise one. Some of the earlier illustrations given are very crude.

Agriculture for Southern Schools. By J. F. Duggar. xi+362 pp. (New York: The Macmillan Co.) 4*s.* 6*d.*—Prof. Duggar points out that while many of the principles of agriculture are universal, the application of the principles is somewhat local. His book differs from most manuals of agriculture in applying to a definite and limited field: the Southern States of America. It is precisely this local note which will make the book valuable to many English teachers, for practical details of the cultivation of sugar cane, cotton, and other crops are so described that selections from the volume would be notably successful in geography lessons. On the other hand, students of botany may gain much that is useful from the author's lucid treatment of general principles. There can be little doubt that the book will admirably fulfil the purpose for which it is written. It is excellently illustrated.

Nature Notes and Notions. By Alyce L. Sandford. 205 pp. (Pitman.) 3*s.* 6*d.*—Mrs. Sandford's third collection of nature-lessons for young children has the virtues and defects of its predecessors. Every page is evidence of the author's skill in teaching and of her enthusiasm for "correlation," but the book would have gained considerably in value if it had been revised by a sound naturalist. Sir George Kekewich writes a commendatory foreword.

The Country Home for May (Constable, 6*d.* net) is so full of good things as to support the publishers' claim that the magazine is "the best illustrated monthly devoted exclusively to the interests of those who live in the country." Articles on fly-fishing, French methods of cultivating early forced crops in England, bee-keeping, how to work a small holding at a living profit, and other "practical" subjects appeal to the strenuous reader; while descriptions in lighter vein of Wick Court, Gloucestershire, and the village of Castle Coombe, Wiltshire, continue another pleasant feature of the magazine. Mr. W. H. Taylor contributes a brightly written article on the course of a river, and Sir F. C. Gould's account of how he made his country home is full of interest from several points of view. The illustrations are numerous, and are reproduced—mostly from photographs—in a manner which is beyond praise. The frontispiece is a coloured copy of Sir H. von Herkomer's "Our Village."

The Changeling. By Sir Digby Pigott. 183 pp. (Witherby.) 2*s.* 6*d.* net.—After the many volumes of vapid sentimentalism which have appeared under the guise of nature stories, this unpretentious little book should receive a welcome. Considerable literary power, a dainty fancy, and a sound knowledge of natural history have resulted in a pleasant little tale which every healthy-minded boy and girl will enjoy. The book contains a number of excellent drawings by the author and Mr. Charles Tresidder.

Miscellaneous.

William Haig Brown, of Charterhouse. A short biographical memoir written by some of his pupils and edited by his son, H. E. Haig Brown. viii+220 pp.;

with portrait. (Macmillan.) 7s. 6d. net.—A book like this always has an air of unreality to those who have not known its subject; but it has its interest, as of a glimpse into a family circle. Dr. Haig Brown was one of a type happily not uncommon, vigorous in mind and body, self-reliant, capable, tenacious, and he inspired respect and affection in those who knew him. He must have had a happy and full life, and he did his duty to the State in leaving a large family of sons and daughters. His great achievement was, of course, the migration of Charterhouse School into the country: a change beset with practical difficulties, but not by the chief of all difficulties, lack of money. The migration was well managed; the new school, if not well planned, at least was put where it had space to grow, and it did grow. The growth of the new school, once its place was found, was due to external causes. For his share in this new growth full credit must be given to Haig Brown; but the book does not show us any distinctive mark that Haig Brown left; it seems rather as if the same might have been done by other vigorous men. In the organisation of the school work there are no signs of prescience or even of insight: Charterhouse School was like other schools. If such a chance were given to-day, it might result in something as much above the existing type as Arnold's Rugby was above the earlier type. Few will deny that the time is ready for a new type: one good order has begun to corrupt the world by standing still: we move *per loca senta situ*.

One or two further remarks may be made. We are struck by Dr. Haig Brown's skill in versification: here are very good verses in English, German, French, Latin, and Greek. He must have been a capable teacher, although, as his biographers say, he could not approach the genius of Mr. T. E. Page. Lastly, we would offer our congratulations to the editor on his skill in compilation. There is very little repetition, and the chapters fit well together. To Carthusians this book will be of high value. For others also it has its value, as the record of a strong and capable man.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in* THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.

Conditions of Service of Secondary-school Teachers.

THE Incorporated Association of Assistant-masters has instituted an inquiry into the conditions of service of secondary-school teachers in France, Germany, and other countries. The object of the inquiry is to obtain and publish in a convenient form information which will be of help to those endeavouring to reach a wise and well-considered judgment as to whether teachers in schools aided by public money should be members of the Civil Service.

It has not proved difficult to obtain from Blue-books and elsewhere particulars of salaries, pensions, and the legal conditions of service in France and Germany, but on such questions as the preliminary outlay, the personal freedom of the teachers, and the loss of individuality of teachers and schools under Government control little has been ascertained. May I, therefore, appeal to teachers to send to me for the use of the committee entrusted with the inquiry—on which the Association of Assistant-mistresses is represented—the results of their experience in France, Germany, or Austria, on any of the points in the accompanying list of topics, and also to teachers in England for information that will enable us to make a comparison?

FRED CHARLES.
(Hon. Sec. Inquiry Com.)

Strand School, King's College, W.C.

List of Topics.

1. *Monetary.*—(i) Preliminary outlay—*i.e.*, what is necessary to begin work.

(ii) Remuneration: (*a*) salary; (*b*) pension.

2. *Legal.*—(i) Appointment.

(ii) Dismissal.

(iii) Promotion: (*a*) to assistantship; (*b*) to headship; (*c*) to inspectorship; (*d*) to other administrative posts.

(iv) Hours of work: (*a*) teaching; (*b*) supervising. (Distinguish between paid and unpaid work.)

(v) Relation to administration—headmaster, inspectorate, &c.

(vi) Transfer from (*a*) school to school (how is a man's seniority affected by transfer); (*b*) town to town; (*c*) State to State.

(vii) Remuneration during sickness.

3. *Personal.*—(i) Freedom in school (*a*) to exercise initiative with respect to curriculum, method of teaching, and general internal arrangement; (*b*) to administer punishment; (*c*) to exclude pupils (1) from class, (2) from school; (*d*) to inculcate beliefs.

(ii) Freedom out of school (*a*) to take part *or not* in corporate life, games, school societies, &c.; (*b*) to take part in public and religious life; (*c*) to take other teaching work; (*d*) to enter into other business relations.

(iii) Freedom to take leave of absence for professional purposes—*e.g.*, travel, study, temporary posts.

(iv) Influence and relations (*a*) with pupils; (*b*) with parents; (*c*) with future employers of boys.

4. *School organisation and its effects on the conditions of service.*—(i) Central control.

(ii) Local control (decentralisation).

(iii) Types of schools: (*a*) social distinction; (*b*) educational distinction, such as specialisation for certain work—*e.g.*, scholarships, Civil Service.

(iv) Leaving certificate.

5. *Comparison of position of teacher with that of other professional men with respect to* (i) salary; (ii) status.

6. *The means used in, and the circumstances attendant on, the change from previous organisation to organisation under the State.*

7. *Loss of individuality of teachers and schools under Government control.*

Quantitative Work in Science in Secondary Schools.

QUANTITATIVE experiments form a large part of school laboratory practice in these days—indeed, it is questionable whether too much attention is not given to experiments the results of which can be stated in numbers, to the neglect of others quite as educative and far more interesting. I have never seen, however, any suggestions as to the degree of accuracy to be expected from young students in such work, nor any statistics of results actually obtained under ordinary school conditions; so that the following figures may possibly be of interest to science teachers. They show in condensed form the degree of accuracy attained in some chemical experiments performed during the past seven months by pupils (boys) of average ability, aged from 15½ to 16½ years, who have been study-

ing chemistry (three hours weekly) for three sessions previous to this, and have also been learning physics for the same period. They have therefore had a fair amount of practice in laboratory operations and last year did a few experiments of the same kind as a sort of preliminary to the study of combining weights, equivalents, laws of chemical combination and chemical theory, which has occupied them this session.

In making out the table following, *every* result has been included (good or bad); but I am obliged, for want of space, to omit the actual figures. The reason for the varying number of results is that some experiments were not done by the whole class. The standard of comparison in each case is that obtained by using the atomic weights table for 1909. The chemicals used were such as are ordinarily sold as "chemically pure," and were not specially prepared for the experiments; the balances and weights were of average school quality. In no case was any hint given as to what the result of an experiment was likely to be.

Experiments.

1. Proportions in which magnesium combines with oxygen. About 0·3 gram magnesium ribbon burned as completely as possible in a crucible, oxidation being completed by treating with nitric acid.

2. Proportions in which zinc unites with oxygen. Method as above, except that oxidation was brought about entirely by nitric acid.

3. Proportions in which tin unites with oxygen to form stannic oxide. (Same method.)

4. Proportions in which copper unites with oxygen. Cupric oxide reduced by hydrogen.

5. Proportions in which lead unites with oxygen. Lead monoxide reduced by hydrogen.

6. Proportions in which mercury unites with oxygen. Mercuric oxide reduced by heat.

7. Proportions in which copper unites with sulphur (to form cuprous sulphide). Copper heated with sulphur in a covered crucible until constant in weight.

8. Proportions in which silver combines with sulphur. (As above.)

9. Proportions in which silver combines with chlorine. Silver dissolved in nitric acid; treated with hydrochloric acid until constant in weight.

10. Weight of magnesium replacing 1 gram of hydrogen. The weight of hydrogen was calculated from its volume.

11. Weight of zinc replacing 1 gram of hydrogen. (Same method.)

12. Weight of calcium replacing 1 gram of hydrogen. (Same method.)

13. Proportions in which zinc replaces copper. Zinc dissolved in copper sulphate solution; the precipitated copper weighed.

14. Proportions in which zinc replaces silver. (Same method.)

15. Percentage of oxygen in potassium chlorate; a weighed quantity heated until constant in weight.

16. Percentage of lime in chalk. Chalk heated either in a loop of wire in naked flame or in a small crucible furnace.

17. Percentage of carbon dioxide in sodium carbonate (dry). A very simple form of Schrötter—the carbonate (or acid) in a small test-tube inside a wide-mouthed flask plugged with cotton-wool.

18. Weight of sodium chloride got from a certain weight of sodium carbonate.

19. Percentage of water of crystallisation in copper sulphate.

Table of Results.

No. of Experiment	No. of Results	Degree of Accuracy: Within 1 per cent. Per cent.	Within 2 per cent. Per cent.	Within 3 per cent. Per cent.
1	14	14	57	57
Note (1). The very small quantities used make it difficult to secure good results.				
2	16	25	50	81
3	13	23	64	77
4	16	19	56	81
5	12	41	50	67
Note (2). In this case the loss of weight is very small in comparison with the quantity of material used.				
6	18	55	72	78
Note (3). The mercury oxide was certainly not very pure and left a distinct residue; on the other hand, probably some mercury was lost by evaporation, and the two errors compensate one another to some extent.				
7	21	57	67	76
8	15	40	80	80
9	19	58	79	89
10	15	20	53	67
Note (4). The same objection as applies in (1).				
11	11	73	73	82
12	12	33	42	42
Note (5). The calcium was almost certainly not pure, and it is difficult to prevent oxidation.				
13	11	82	91	91
14	8	87	87	100
15	20	65	85	85
16	25	72	88	92
17	25	36	56	72
Note (6). Doubtful whether the sodium carbonate was perfectly dry.				
18	19	47	74	95
19	14	36	64	93

These columns show the degree of accuracy attained by the pupils referred to. In the classes a year lower down a little of the same kind of work has been done, but the results have been much less satisfactory. If these figures are normal, it is evident that quantitative experiments (at least such as are to form a basis for developing chemical theory) cannot profitably be undertaken until the third or fourth year of a chemistry course. I shall be interested to know if this is the general experience of teachers of chemistry; in most of the text-books I have seen such experiments are introduced much earlier.

Gordon's College, Aberdeen. H. G. WILLIAMS.

Silica Apparatus.

THERE are many chemical experiments which, owing to the high temperature necessary, are not often done by pupils in a school laboratory. The first piece of apparatus, made of silica, described here, was devised to afford a means of doing such experiments by the Bunsen flame alone. It consists of a spoon made of transparent silica. The spoon consists of a hemispherical bowl, A (Fig. 1), 9/16 in. in diameter, and a handle, 2 in. long.

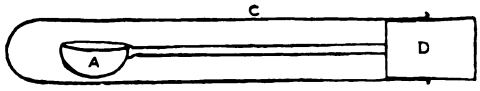


FIG. 1.

The latter is kept in a test-tube C, by being pushed into the cork D. The cork serves as a convenient handle and also as a means to clamp the spoon. The test-tube shields the spoon from injury and is very convenient in quantitative experiments.

The following are some experiments for which the silica spoon may be used.

(i) Fill the bowl with common salt. Clamp the cork A (Fig. 2) so as to hold the bowl in the hottest part of a Bunsen flame. In a few minutes the salt will melt.

(ii) Nearly fill the bowl with nitre, heat strongly, add a

little piece of graphite, remove the apparatus from the flame and hold it under a gas cylinder. The graphite will deflagrate, and on testing the gases in the cylinder with lime-water, carbon dioxide will be found to be present. This experiment works well as a lecture experiment, being easily visible to the whole class. It is much the quickest way of proving that graphite contains carbon.

(iii) Mix together barium sulphate and powdered charcoal. Heat in the silica spoon for five minutes, when the following reaction occurs:

$$BaSO_4 + 4C = BaS + 4CO.$$

On treating the residue with HCl both H_2S and barium may be readily detected.

(iv) Heat metallic cadmium in the spoon. It will burn, forming the brown oxide. This is also suitable for a lecture experiment.

(v) *Quantitative.*—If the apparatus, test-tube and all, be weighed, and then the bulb be filled with precipitated chalk and weighed, the latter will be found to lose 44 per cent. of its weight after heating in the Bunsen flame for one quarter to half an hour. This experiment is easily performed and very accurate. The bowl holds about 0·4 gm. $CaCO_3$ when the latter is pressed down, consequently fairly accurate weighing is necessary. It is best to keep the spoons for this experiment separate from the others. I keep them in an ordinary test-tube rack.

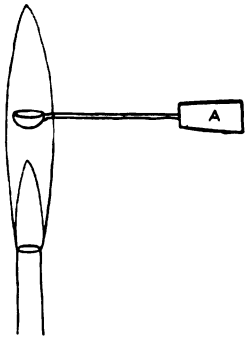


FIG. 2.

(vi) Mix together nickel oxide and carbon, place the mixture in the bowl of the spoon, and then cover the mixture with a layer of charcoal (to prevent oxidation), and heat for five minutes. The nickel produced will be found to be magnetic. Iron or cobalt oxides may be used instead.

These spoons may be placed in water when red hot without cracking. They are, of course, as fragile as glass to rough treatment. A good way to clean them is to melt potassium hydrogen sulphate in them. They may be used for all experiments described under the second apparatus. They were made for me by the Silica Syndicate, Ltd., Hatton Garden, E.C., whom I wish to thank for their trouble and courtesy. They cost 6*s.* the dozen.

The second apparatus consists merely of a slip of opaque silica 2 in. × ½ in. × ⅛ in. It was devised to avoid the use of platinum foil and the blow-pipe. To use the slip, place the substance to be heated upon one end, and then heat it from the top with the Bunsen flame. It is best to heat it from the top, because otherwise the slip becomes uncomfortably hot to hold, and besides, such a high temperature is not attained.

(i) Place a little nitre, and still less anhydrous sodium carbonate, on the slip. Heat until they melt; add the merest trace of a manganese compound, when the green manganate is at once obtained.

N.B.—The silica spoon can be used for doing this as a lecture experiment, enough being produced to pour into water.

(ii) Similarly, the test for chromium may be done.

(iii) Put any zinc compound on the slip, and moisten the former with cobalt nitrate solution, and heat *without* a blow-pipe. The green colour is obtained much more easily than with charcoal. Similarly, the blue with aluminium can be beautifully got. In using cobalt nitrate it is advisable not to wet the silica itself with the nitrate, because it takes some little time to clean it off (use fused $KHSO_4$).

All the above tests may be readily applied to precipitates, and I find that boys prefer to use the slips to charcoal and the blow-pipe.

(iv) Gunpowder is frequently separated into its constituents by junior forms. If the carbon so obtained be placed on a silica slip it can, of course, be shown to be combustible. An ordinary thin microscope slide may, with care, be used instead, but it is not so satisfactory.

These slips were made for me by the Thermal Syndicate at Wallsend-on-Tyne. They cost 2*s.* the dozen, cannot be broken by heating and cooling, and may be dropped on the floor with impunity.

A. J. ROBINSON.

The Grammar School, Batley.

The Diffusion of Gases.

THE verification of the law relating to the diffusion of gases has presented great difficulty to teachers of science, as no simple form of apparatus has been devised for the purpose. Messrs. W. and J. George, Ltd., Birmingham, have undertaken, however, the manufacture of a piece of apparatus designed by me, and similar to that used by my students with most satisfactory results.

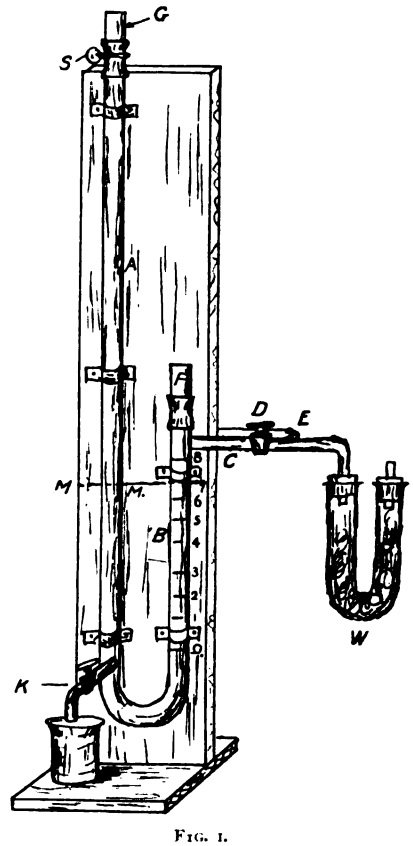


FIG. 1.

It consists essentially of a U-tube with one long arm A and a short arm B. The top of B is closed by means of a piece of a clay-pipe stem F sealed at the top and attached to B by india-rubber tubing. Near the end of B is a side tube C provided with a stopcock D, and to this is attached another side tube E which passes to the back of the apparatus, as shown in Fig. 2. This tube acts as a safety valve, and leads into a tubular vessel Y which contains water. A drying tube X is placed at E to prevent any moisture from Y entering the tube C and thus mixing with the gas. In the case of a noxious gas being used, an absorbent liquid is put into Y to absorb the excess, and thus prevent its escaping into the air.

At the top of A, also provided with a stopcock K, is

a small piece of glass tubing G fixed thereto by india-rubber tubing, and closed by a screw clip S. Before experimenting, the gas is passed through U-tubes W to be purified.

To perform the experiment connect W with the generating apparatus, and allow the gas to pass through the tubes C and E. Close K and open D. Pour mercury through G until it reaches the same level, say M, in both arms. Now close D. Pour in more mercury until G is filled. Screw tightly the clip S, and pour back the excess of mercury in G into the vessel which originally contained it. The gas in B, in the meantime, will have been forced through the porous pipe F, so that B will now be full of mercury. Open the stopcocks K and D and let the mercury run out from B until the graduation o is reached, the gas taking its place. Close K and D and open S. The gas is now under a pressure of two atmospheres, and so its volume will be suddenly diminished. Finally, the time taken for the mercury to rise—say from 2 to 8 divisions—is noted.

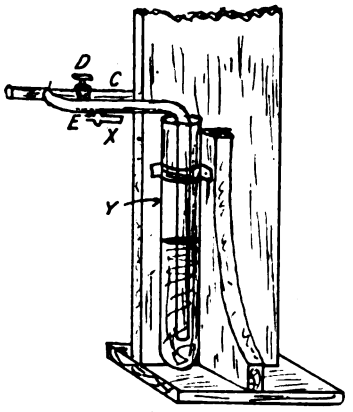


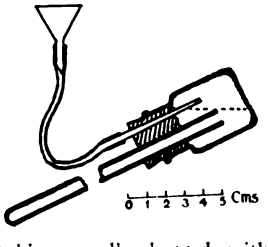
FIG. 2.

LL. T. JONES.

Grammar School, Bingley, Yorks.

A Method of Setting up a Barometer.

A SMALL, wide-mouthed bottle of 18 c.c. capacity was used for the cistern. A strong specimen tube with no neck might be better. A cork, fitting the bottle, is perforated to admit the barometer tube and a piece of tubing drawn down to an outer diameter of 3 mm. The latter is connected by, say, 15 cm. of clean rubber tubing to a small funnel. The inside of the barometer tube, 6 mm. bore, is dusted out with a plug of cotton-wool well secured to the end of an iron wire and the parts fitted as in the sketch. The barometer tube should reach half-way down the bottle and be as near one side as possible. Mercury is now poured into the funnel in small portions, and with a little manipulation may be worked into the bottle and so into the barometer tube. When the latter is full the apparatus may be raised into the normal position without the open end being uncovered. As with the Fortin instrument, it will now be found possible to invert the barometer as often as may be necessary to remove air bubbles.



For this purpose the quill tubing may be replaced temporarily with a solid glass plug. In the writer's experiment, after two or three inversions, the air in the "vacuum" has a volume no larger than an ordinary pinhead at 1/10 of an atmosphere. The original quill tubing, well plugged with dry cotton-wool, is now replaced and the instrument mounted with a contracted scale, as in the Kew type.

I may mention that I redistilled my mercury in a 100 c.c. Jena retort, following Woollatt's excellent handbook on "Laboratory Arts" (Longmans). After distillation the mercury appeared dirtier than ever, but the oxide was entirely removed after shaking with strong sulphuric acid. About 1 lb. is required with dimensions as stated above.

A. C. S.

Glasgow.

The Determination of the Volume Coefficient of a Gas.

IN making a determination of the volume coefficient of a gas with a modified form of Gay-Lussac's apparatus, the values obtained are very often unsatisfactory, due in a large measure to the fact that the mercury thread is not an efficient trap. A second source of error is the moisture which persistently adheres to the sides of the tube containing the gas.

With a view to eliminate these errors and produce an inexpensive, yet accurate, apparatus, I took a piece of thermometer tubing of 1 mm. bore and 20 cm. long, and sealed one end. By heating it to about 130°, and then placing the open end under concentrated sulphuric acid and allowing it to cool down to the atmospheric temperature, I imprisoned a column of gas about 10 cm. long by a thread of concentrated sulphuric acid.

In a subsequent determination of the volume coefficient of air with this apparatus the result showed that the acid formed an efficient air-trap, and it also served to dry the enclosed gas.

The tube was fixed to a scale by wire and placed in water at 19°. The reading of the acid meniscus was 9·2 cm. It was next placed in a beaker of boiling water, and the reading of the acid meniscus was 11·7 cm., from which the volume coefficient = 0·00358. The time taken for a determination need only be, at the outside, ten minutes, while the accuracy is much greater than the average student can obtain in a much longer time with any of the ordinary forms of this apparatus.

With a tube 20 cm. long, and 15 cm. of air at 15° working between the temperatures 15° and 100°, the error introduced by an error of 1 mm. in a reading = 2½ per cent., so that even with this short tube, if chosen with a uniform bore, the error is small.

Briefly, the advantages of the apparatus are: small cost, small size, and short time required for a determination.

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The School World.

A Monthly Magazine of Educational Work and Progress.

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The School World

A Monthly Magazine of Educational Work and Progress.

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COMMEMORATION OF THE FOURTH CENTENARY OF ST. PAUL'S SCHOOL.

FOUR HUNDRED years, according to the commonly accepted tradition, have come and gone since John Colet, Dean of St. Paul's, founded his school under the shadow of the cathedral, "in the honor of Christ Jesu in puericia and of his blessyd Mother Mary." Therein he directed that "children of all nacions and countres indifferently to the noumbre of a cliii" should be "taught al way in good litterature both laten and greke," and "oute of this scole," he continues with punning sarcasm, "fylthynesse and all such abusyon which the later blynde worlde brought in which more rathyr may be callid blotterature thenne litterature I utterly abbanysh and exclude."

Greek and Latin, then, were the subjects directed by Colet to be taught in his school, and such, but with the addition of Hebrew, they remained for more than three hundred years. At last, under Dr. Kynaston, high master from 1838 to 1876, the rigid exclusiveness of the old classical tradition was relaxed, and mathematics, and subsequently French, were added, subjects which were regarded by the boys rather as a pretext for recreation than as matter for serious study. Under his successor, Mr. Walker, science also was admitted, and from that time on fresh subjects have been added in an ever-widening circle, until now no boy, be his natural aptitude what it may, need fail to find suitable material on which to exercise his growing powers. Prizes there have long been in abundance for the different branches of pure scholarship and divinity; but of recent years there have been added school prizes for French and German also, for history and geography, for literature and drawing, and even for handiwork of every description, from the making of model motor-cars or the taking of photographs to the collecting of fossils, shells, or butterflies. And yet, meagre as the list of subjects originally taught must seem to the modern educationist, a glance at the names which adorn the cover of the school magazine shows that no mean array of talent was fostered within the grim old walls. A Milton, proud as we may be of his superb genius, seems but a natural growth on such a soil; so, too, in their studious pursuits do John Leland, King's Antiquarian to Henry VIII., William Camden, John Strype, George North, all eminent antiquarians; the name of Roger Cotes is there, the eminent mathematician and friend of Isaac Newton, and that of the still more eminent Edmund Halley, known for his researches in connection with the comet that bears his name.

But it is not only in the paths of research that Old Paulines became famous: we have had men famous in law, such as J. F. Pollock, Senior Wrangler and Lord Chief Baron of the Exchequer; Anthony Denny, King's Remembrancer; Spencer Compton, Lord Privy Seal; and Baron Truro, Lord High Chancellor. Prominent in politics were Thomas Clarkson, a pioneer in the abolition of the African slave trade, and Sir Philip Francis, the bitter opponent of Warren Hastings and probably the author of the "Letters of Junius." Better known will be Barham, author of the "Ingoldsby Legends," once "a youngster at school on Dean Colet's foundation"; the notorious Chief Justice Jeffreys; the ill-fated Major André, captured within the American lines during the War of Independence and shot as a spy; genial, gossiping Samuel Pepys, Secretary for the Navy, President of the Royal Society, and diarist inimitable; while greatest of all the men of action, as Milton was of the men of letters, we have John Churchill, Duke of Marlborough, the victor of Blenheim and Ramillies, Oudenarde and Malplaquet.

Such were some among the many names of men famous in every walk of life that were present to the minds of those who listened on July 7th to Lord Curzon of Kedleston, as he declared the newest block of buildings open.

The original building stood at the east end of St. Paul's Cathedral. Finished about 1510, this was destroyed by the Great Fire of 1666. A fresh building on the same site lasted some hundred and fifty years and then was replaced by one which will be still fresh in the memory of many old boys. From the churchyard the school moved to its present site in 1884. Since then, workshops, a gymnasium, and a swimming bath have at various times been added; and now, last of all,

there has been built the new block which has just been opened, and of which a full description will be published in our next issue.

But though the ceremonies of July 7th formed the principal feature in the commemoration, they were only a part, though the most important part, of festivities that extended over the whole of July. An "at home" given on the 1st of the month by the Surmaster and Miss Gardiner may be said to have opened the season; the Mercers' Company issued invitations to a large number of Old Paulines to a dinner on July 15th; the Mayor of Hammersmith, himself a distinguished Old Pauline, gave a banquet at the Town Hall on the 22nd of the month, while the list was brought to a close by a masque, performed by the youngest offshoot of the foundation, the Girls' School on Brook Green. In this Dame Christian was seen, in extreme old age, dreaming of the greatness which was to be the lot of her son's school. The thoughts which passed through her vision were interpreted to the audience by a Spirit of Piety, a Spirit of Learning, and the like.

It is, however, with the doings of July 7th that we are here more immediately concerned. These included the opening of the new buildings by Lord Curzon, followed by a luncheon, and in the evening a conversazione, in the course of which the Old Pauline Club gave a representation of Milton's "Comus." With commendable punctuality the long procession that escorted the Chancellor of Oxford started from the board room and made its way between the long lines of the cadet corps to the buildings that were to be opened. A brief religious ceremony was there performed; Lord Curzon opened the building and inspected it, and then, returning to the top of the steps leading down from the school terrace to the new buildings, listened while the chairman of the governors expressed the thanks of all present for the honour which Lord Curzon was conferring upon the school by coming among them. This was followed by the speech of the day, in which Lord Curzon, with the polished ease of the great man to whom such an occasion was but an everyday occurrence, ran lightly over the outstanding features in the school's history, enlivening by flashes of genial humour the tale that is familiar to every Pauline. The most interesting part of his speech came towards the close, where he warned the boys to avoid the snare of self-depreciation. Starting with the assumption that foreigners see us better than we can see ourselves, he reminded the boys that though foreign nations laid claim to better systems, appliances, and methods of education, they yet confessed that they failed to produce what was produced by our schools and universities; they sent over delegates to examine on the spot the working of our schools, and to discover the secret of a success which they envied; but a secret it remained to them. Here was no ground for self-depreciation.

The procession then returned to the board room. Luncheon was served in the great hall, to the gallery of which the ladies, who had been entertained apart in the dining hall, descended in time to listen to the speeches. These were of a slighter character than those of the morning, the most notable being that of the Bishop of Manchester, himself an Old Pauline. In a delightfully humorous speech he described the troubles at the old school of a boy of a non-mathematical turn of mind when he sought for an explanation of some difficulty which puzzled him from the classical master, who was set to teach mathematics without having studied them; then, in more serious vein, he spoke of the munificence of a foundation which enabled a poor man's son to attain high intellectual distinction. His own education had cost his father but one shilling, and that was paid to the school-porter!—not a great sum surely, we must admit, to pay for an education good enough to lead to a first class at Oxford in classics, a first class in law and modern history, a Boden (Sanskrit) scholarship, a fellowship at Merton, and a bishopric.

As we look back at this, the first part of the day's ceremonies, it is impossible not to be struck by two things: the representative nature of the gathering and the fresh evidence afforded of the faithfulness displayed by the Mercers' Company in the trust committed to them four hundred years ago by the great Dean of St. Paul's. A sum of £10,000 devoted to what they believe to be a realisation of the liberal views on education held by John Colet is a very practical proof of their munificence. The fact that from father to son Bicknells have, as their turn for office came round, been chairmen of the governing body for six generations is striking evidence of the continuity of the interest taken in the welfare of the school.

The esteem in which the greatest of London schools is held may be gauged by the representative nature of the gathering. The Lord Mayor of London was there with the mayors of three boroughs; there were three bishops; there were representatives of the Universities of Oxford, Cambridge, and London; the deans of six great hospitals, and the headmasters of several important London schools. And though the studious are supposed to be dull and, at any rate in their earlier years, are expected to wear raiment that is dull or "subfusc" in hue, yet Learning rejoices to deck those who have attained her highest honours in gaudy, if not always artistic, colours. In this gathering a flavour of pageantry was lent to the procession by the various and, in some cases, gorgeous robes worn by those who took part in it. The scarlet, black, and crimson of the robes of a Chancellor of Oxford, of a Doctor of Divinity, or of a Doctor of Law, the quaint purple headgear of the bishops, the rich robes of the Lord Mayor and of the chairman of the governors, the dazzling radiance of a London Doctor of Science, the gleaming mayoral chains of office, the flash of silver maces, all helped to lend outward picturesqueness to a gathering of men brilliant in intellectual attainment.

In the evening a very large number of guests

attended the conversazione given by the chairman of the governors. Many features were the same as those that may be seen at any similar annual function; what made this particular evening memorable was the production by the Old Pauline Club of Milton's "Comus." It had been hoped that it would have been possible to give this in the school grounds, but the weather was so uncertain that it was wisely decided to give it in the shelter of the King's Theatre hard by. Though the conditions were more artificial, the probability is that the representation gained in effect owing to the mechanical appliances thus rendered available.

It is difficult to write of the performance so as to do it justice. That it was intensely interesting as a revival is beyond question; that the result must have been disappointing to many is also hardly open to question. The incidental music, performed under the direction of Mr. W. H. Bell, R.A.M., consisted of the original music composed by Milton's friend, Henry Lawes. To musicians the score could not fail to be interesting; to the lay mind, though pretty, the result sounded thin. The acting of Miss Ada Potter as the Lady was from first to last admirable; that of Mr. Gordon Cleaver as Thyrsis and of Mr. E. H. Warburton as Comus was, as the piece went on, distinctly good; the dancers, both in by-play and in actual dancing, were really excellent. It cannot be urged that the poem lost to any appreciable extent through its interpreters.

And yet—well, the performance seemed to emphasise just what it would have been desirable to conceal; it was not so much thinness of plot that was brought into prominence as the lack of stage-craft that runs through the composition of the masque. One inevitably murmured that Milton was a great poet, but he was not a practical dramatist. As a poem to be read in the study it is a classic, and deservedly so; the wealth of poetic imagery, the melody of the verse, the delicacy of the workmanship captivate the attention; while the mind is concentrated on the verse the reader forgets to consider what the other characters on the scene are doing. On the stage, however, the conditions are entirely different. The long speeches, over the poetry of which it is there impossible to linger, too obviously stop the action. To take a single instance: one is exasperated by the nice philosophic reasoning of the two brothers in search of their lost sister when it would have been so much more practical on their part to have tried the effect of a shout or to have *done* something, no matter what, instead of standing still and talking. This view may not have been taken by many; at any rate, the audience were enthusiastic at the close, carried away perhaps by the very effective dancing with which the masque concluded. The dancing was delightful—but, after all, the dancing is not Milton.

But whatever may have been the measure of success attained, there can be no doubt as to the debt owed by all to the enterprise and labours of those members of the Old Pauline Club who, aided by the expert knowledge of Mr. Carr, were responsible for a revival memorable in itself, and doubly memorable for the occasion which called it forth.

SECONDARY EDUCATION IN INDUSTRIAL CENTRES.

THE recent report of the inspectors of the Board of Education on the secondary schools of Bradford and their conclusions as to the results obtained are of great importance and afford food for serious reflection. The questions raised have not only been widely canvassed in the local Press, but have been the subject of a communication to the *Times*, and that journal, in an able leading article, has accentuated the points brought out in the report and pointed their moral as affecting education generally. While deservedly complimenting the Bradford education authority on the great efforts it has made to bring a secondary education within the reach of every child in the city, the report directs attention to serious defects in the whole system and to the fact that the results obtained are of the most meagre description. In Bradford, the elementary schools at the bottom of the ladder and the grammar schools at the top are admittedly efficient and are doing excellent work. But the report finds grave fault with the municipal secondary schools, which stand, as it were, between the two.

These schools are for the most part admirably equipped and very fairly staffed, and are so well supported financially that they are able to offer a cheap and, in a large number of cases, an entirely free education to their pupils. But, in the opinion of the Board of Education, the result is clearly disappointing. "Pupils leave in considerable numbers at thirteen years of age," says the report; "45 per cent. of the pupils leaving last year had been two years or less in the secondary schools." Such pupils have not even "had a first-class elementary education." In many cases "pupils get more harm than good . . . they are spoiled as artisans, and a potentially good workman becomes an inferior clerk." "Obviously from all points of view" the administration "is working very badly." "The waste of money and effort . . . is very great." The liberal grants of free scholarships and maintenance allowances evoke "no response on the part of the parents." These are some of the chief heads in the indictment, and it is unnecessary to indulge further in quotation from the report, as it is well known that the Bradford committee has shown praiseworthy energy in dealing with the problem.

Bradford, as the inspectors are themselves quite aware, is but typical of the position in many large industrial centres, and has only become the scapegoat for other towns owing to the exceptional efforts her citizens have made in the cause of education. The disturbing feature is that we may apparently argue from the parti-

cular to the general, and we are face to face with the fact that in not a few towns in the country the municipal secondary schools are by no means achieving what was expected of them. If, then, we can only read the lesson aright and take stock of the position, the case of Bradford will have proved a blessing in disguise.

What, then, are the real causes of the failure? The fact is that the education given in these municipal schools is not a secondary education at all. The early age at which the pupils leave precludes the possibility of its being such, as a proper four years' course becomes impracticable; and, indeed, in this respect many of the schools seem hardly to comply with Article 2 of the Board's Regulations for Secondary Schools. Again, it can scarcely be doubted that the whole atmosphere of the schools is an elementary-school atmosphere. The staffs consist, usually, of men and women specially trained for elementary-school work. It is noted that they have often had no secondary-school experience themselves, and still more frequently no university career. The education given can only properly be termed a higher elementary education. Nor does it appear that it can ever be otherwise until means are found to create a true secondary-school spirit where at present none exists.

But that in itself is by no means the worst aspect of the question. The state of affairs reacts and has a deleterious effect upon the work which can be and is being done by secondary schools in the country, that is, by what are known as the grammar schools. Unfortunately, the bait of a practically free education which the municipal schools hold out is swallowed eagerly, with the result that many boys and girls are captured and diverted from the grammar schools. The result is that they never get the kind of instruction that is so desirable for them, and promising careers are mutilated at the outset, while the kind of work which the grammar schools are waiting to do is in these cases never done at all.

Further, the municipal schools monopolise the bulk of the available money, and consequently the older schools are starved. The latter are obliged often to carry on their work with an inferior equipment and are hampered seriously by want of funds. The money which is raised to finance a secondary-school system is poured into the wrong schools, and much of it, as the Board of Education has discovered, if not wasted, is at any rate expended in an unremunerative manner. True, the elementary-school work done in the municipal schools is of a very high standard, and it is chiefly in the higher forms that the results are so disappointing. But it is primarily for the higher work that the schools are supposed to exist, and for which the ratepayers' money is placed so liberally at their disposal. And it is just here that the failure takes place. The elementary work is good, as it depends on more or less mechanical processes, which processes kill secondary-school work. But where the elementary-school spirit is carried into the higher work, as it is to be feared is largely the case in the municipal schools, the results can never be of the best kind, and failure is inevitable.

Yet what else can be expected where an elementary-school atmosphere prevails? The difficulty is well known and clearly understood. The public as well as the Board of Education are fully aware of it, and remarks in inspectors' reports to the effect that the teachers in municipal schools are often not allowed sufficient latitude in their teaching are very significant. They clearly indicate the character of the ideas too often governing the whole spirit of the administration of these schools. The personality of the teacher is far from being the least important influence in a truly secondary-school education. The lack of it, or the hampering of its action, cannot be compensated by mere organisation and insistence on method.

Lastly, it is not to be doubted that the parents have to some extent found all this out for themselves. They are to be credited with a shrewd notion of the value of the education which their children are receiving and of the progress they are making. They doubtless make comparisons, like the rest of us, and they soon feel that what they were told was a secondary-school education falls short of their expectations. To complain that they show no response is hardly fair until the advantages which are offered produce far better results than they do at present. They may be trusted to keep their children at school for a longer period, even at some pecuniary sacrifice to the "family budget," as soon as they feel that the gain is really worth the sacrifice, though there must, of course, always be cases where the circumstances of the parents compel them to turn their children into wage-earners at the earliest possible moment.

Such, then, being the cause of the failure, it will be asked naturally, "What is the remedy?" And it behoves us briefly to address ourselves to that question before concluding.

To return for a moment to the particular report which has given rise to the whole discussion, we find that the inspectors of the Board of Education have some valuable suggestions to make in the case of Bradford, and no doubt we may assume that they apply equally to the country at large. They think that the desired end may be obtained by enforcing regulations in connection with the grant of free scholarships, by compelling parents to engage to keep their children at school for the necessary length of time to enable them to complete a full course, by granting maintenance allowances to children only of a certain age (fourteen), and "by steadily commending the necessity, the purpose, and the value of secondary education to the community at large."

All this is excellent, but is it the real solution? Must we not seek to supplement these suggestions by a further remedy which suggests itself at once to anyone taking a broad view of the whole problem before him? The writer of the present article has closely watched the develop-

ments in the educational system of the country for many years, and is of the opinion that the municipal schools have been pushed forward at too great a rate. The fact is that the supply has exceeded the demand, and an unhealthy state of affairs has consequently been produced. Where local education authorities should have proceeded by slow and sure steps and should have been content for some years to feed the already existing secondary schools, while steadily developing their own on sound lines, they have tried to jump at one bound to the ideal, before the public is ready for it. Instead of co-ordinating their system and establishing a proper sequence from the elementary, through "higher grade," to real secondary schools, they have attempted to thrust their municipal schools into a position they cannot at present occupy, and these schools are now unfortunately in positive competition with the grammar schools.

Surely it would have been wiser to wait. The time was bound to come when the demand for an increased number of secondary schools must arise. The municipal schools would have been developing *pari passu* with the demand, and would have been in a position to meet it with some years of experience behind them. It was not to be expected that a host of new schools, permeated by the elementary-school spirit, could immediately take the place which they have tried to occupy side by side with the older institutions. A mistake seems to have been made, but the mischief is not beyond repair. As matters now stand, the municipal schools are achieving but disappointing success, and the older schools are not being used to the best advantage. There is a wastage of money and effort unpleasant to contemplate, while the true interests of education are being but poorly served.

Admirable as are the suggestions of the Board of Education for dealing with the position, the Board would do far better boldly to refuse to recognise the new schools until satisfied that the best possible use is being made of the old, and to discourage such lavish expenditure on the former until the latter are adequately financed. The remedy for the disease is not to be found in a still more vigorous pushing of the municipal schools and a still further expenditure of money, nor by increased zeal in preaching the gospel of secondary education in and out of season. It is to be found in a saner and more cordial co-operation between the authorities of the new schools and the governors of the old, in the fostering between the two of a spirit, not of rivalry, but of mutual support, and in a less narrow view of the principles and purposes which should actuate all educational reform.

Poems and Ballads. (Senior Book.) 88 pp. (Pitman.) Paper, 5*d.*; cloth, 6*d.*—There are thirty-nine pieces in this book, about half illustrating the Hanoverian period, the other half ranging from "Beowulf" to the end of the Stuart period. Some are from contemporary sources, others from later poets. There is a page of "chronological notes on the authors," as well as explanatory notes at the bottom of the pages.

THE WASTAGE OF PUPILS IN MUNICIPAL SECONDARY SCHOOLS.

By R. LISHMAN,
Headmaster of the Belle Vue Secondary School, Bradford.

THE *Times* summary of the Government Inspectors' report on the eight municipal secondary schools of Bradford is likely to rouse considerable discussion in the educational world. In order that a sober and unprejudiced judgment may be formed on this report, it is necessary to know something of the educational history of the town, and of the many successful experiments carried out there during the past thirty years. The Bradford School Board, for example, was one of the first, if not the very first, to appoint a medical officer, in the person of Dr. Kerr, now head of the medical staff to the London County Council Education Committee. School baths—both ablutionary and swimming—were established in Bradford at a time when they were almost unheard of in England. Dr. Kerr's successor, Dr. Crowley (just appointed Assistant Medical Officer to the Board of Education), conducted a series of careful experiments in the feeding of poor children, before the passing of the child-feeding Act, and Bradford now possesses the most perfectly organised system of cooking and distributing meals in the country. During Dr. Crowley's *régime* one of the first municipal open-air schools, and the first school clinic in England, were opened. As early as 1877, Bradford had established the first three higher grade schools, which were imitated by most of the large towns in the kingdom, and were the *fons et origo* of the famous Cockerton judgment. While Circular 709, recently issued by the Board of Education, with the object of increasing and improving the staffs of elementary schools, has caused a panic among the local education authorities, since the meeting of its requirements will in some cases involve an additional annual expenditure of some £10,000, Bradford is untouched. The staffing of its elementary schools has, for many years past, reached the standard set up by the circular.

It is quite in keeping with this record, that the secondary schools of Bradford (a town with a population of 290,000) should contain some 3,650 pupils, or, in the words of the report, that "the ratio of secondary-school pupils to population" should be "12·5 per thousand, a proportion very much higher than is usually found in this country," and that "53 per cent. of the secondary-school pupils of Bradford pay no fees."

Here, however, our eulogies of Bradford must cease, for the inspectors have pointed out an undoubted blot on the town's escutcheon. "Pupils," says the report, "leave in considerable numbers at thirteen years of age. . . . Fourteen is the most usual leaving age, and of about 840 pupils who left the municipal schools last year (38 per cent of the total number in the schools) 600 left at fourteen or under. These 600 (70 per cent of those leaving) represent the wastage from the secondary-school point of view." Again:

"Allowances rising from £7 10s. to £12 10s. per annum are freely given to all parents who satisfy the committee that they are too poor to keep their children at school after the age of twelve."

It may be asked, "How is it that with such high aims on the part of the education authority, the people of Bradford do not respond with equal enthusiasm?" The reasons are at once industrial and historical. In the early decades of the nineteenth century, Bradford was the centre of an agitation which resulted in the passing of a series of Factory Acts dealing with the employment of children. Mr. John Wood, a Bradford manufacturer, first directed the attention of Richard Oastler (whose monument adorns the principal square of the town) to the iniquities of juvenile labour in the woollen mills. This agitation, carried on under the leadership of Lord Shaftesbury, secured some amelioration of the hard lot of these child slaves, and by painful degrees the age for partial employment was raised. Yet in the twentieth century, whilst in adjacent towns like Leeds, Huddersfield, and Sheffield, half-time labour is practically non-existent, there are in Bradford nearly 5,000 children between the ages of twelve and fourteen working in the factories. Large numbers of these go to work for five half-days per week, immediately on reaching their twelfth birthday, and thus not only fail to benefit from the educational advantages provided for them by the community, but seriously retard the work of the schools they attend. Further, on reaching the age of seventeen or eighteen the majority of these boys are turned adrift on the unskilled labour market, the percentage of adult men employed in the mills being extremely small. Here is wastage indeed! When it is considered, therefore, that the maintenance grants, which have in the past been given to children below the age for total exemption from school, have retained numbers of children in the secondary schools until fourteen, who otherwise would have gone into the mills at twelve, the term "wastage" can only be applied in the narrow technical sense.

This custom of sending children to work at an early age has become traditional in the town, amongst all classes of the community, and it will require strenuous efforts on the part of the education authority to bring Bradford, which provides unusual educational facilities, into line with the rest of the country in the matter of the school leaving age. An attempt is being made to do this by holding public meetings of parents, and by insisting on the signing of agreements, under penalty, to keep pupils at school until the 31st of July following their fifteenth birthday.

In discussing these reports, public attention has been focussed solely on the debit side of the balance sheet. It is only fair to present the other side. The local education authority, as the report shows, has made ample provision for secondary education. The instruction given in the schools, under the difficulties pointed out by the inspectors, has received unstinted praise in many successive reports. The reports made on the individual schools in October last are, on the whole, very satisfactory, and in many respects highly laudatory. In the general report, otherwise full of criticism, the inspectors say: "The general impression produced upon those who inspected the teaching was of satisfaction and of sympathy with a body of teachers who are doing their work remarkably well. . . . Art is exceptionally well taught in all schools."

The following items from the record of the first pair of these schools (boys' and girls') recognised by the Board of Education may serve as examples of the higher work done. Forty-two pupils have passed the Matriculation examinations of the London and Northern Universities. Five have gained scholarships at the Royal College of Science (three of them National Scholarships). Of these, one gained, in open competition, an assistant examinership in the Patent Office; a second took the premier position in first-class honours in the final B.Sc. examination (London), and at the early age of twenty was appointed lecturer in physics at King's College, London; while a third took first-class honours in physics at the same examination, and is now a demonstrator in the physical laboratory at the Imperial College of Science and Technology. Another student carried off four medals in the dentistry course at Edinburgh, and three have passed the first M.B. examination at the University of Leeds. One girl took her M.A. degree in education, and is now mistress of history and education in an important provincial training college; another won the Lindsay County Scholarship, of the annual value of £50, and a third the Emsley Scholarship, value £25. The other six schools have obtained equally good results, allowance being made for the length of time that each has been established.

Bradford may have been a little premature in its provision of secondary education, but many signs of the times, such as the resolutions repeatedly passed by the Trades Union Congress asking for the raising of the age for compulsory attendance to sixteen, the Report of the Royal Commission on the Poor Law, which recommends the raising of the leaving age to fifteen or sixteen, and the still more recent suggestions of the Consultative Committee, point to a considerable extension of higher education among the people in the near future. Worstedopolis may then prove herself once again, as she has done in the past, to be possessed of a wise prescience in matters educational.

Dictionary of Quotations (Italian). By T. B. Harbottle and R. H. Dalbiac. 269 pp. (Sonnenschein.) 3s. 6d. net.—The Italian quotations were originally issued in one volume with the French. They are now issued separately, and at a very low price, considering the value of the selection, which we commended on its first appearance in 1900. It is the most convenient dictionary of Italian quotations with which we are acquainted.

THE SCHOLARSHIP SCHEME OF THE LONDON COUNTY COUNCIL.

By Fred Charles, B.A.
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THE London County Council, in 1893, established the Technical Education Board to give effect to the Technical Instruction Acts of 1890 and 1891, and one of the first duties of the Board was to draw up a scholarship scheme to enable children from elementary schools to proceed to secondary schools, and thence to places of higher education. When this scheme reached its normal level there were about 600 junior scholarships open to children under 13 years of age, tenable, as a rule, for two years; 100 intermediate scholarships for boys and girls under 16, tenable to the age of 18 or 19; and from 20 to 40 senior scholarships open to young men and women under 22, and tenable, as a rule, for three years. The scheme also included scholarships for evening work in art and science, a few in cabinet-making and gardening, and about 400 in domestic economy.

When the Council became the education authority for London this scheme was revised. First 1,200 probationer scholarships were established to replace the probationerships of the old London School Board. Then, in 1905, a comprehensive scheme was approved. Junior scholarships were awarded to children of 11 who showed themselves capable of profiting by a secondary education; about 2,600 of these were awarded, tenable in the first instance for three years, with a possible extension to five years. In order to provide a sufficient supply of teachers, about two-thirds of the junior scholars were girls. In 1906 the number of these scholars was reduced to 2,000, when the number of probationers was 800. The number of intermediate scholarships remained at 100, but it was understood that when the junior scholars were approaching the end of their tenure the number would be increased. The number of the senior scholarships, which were awarded in the same way as before, was fixed at 50. Add some 300 trade scholarships, and the result is a very brief outline of the scholarship scheme which is in force in the L.C.C. area.

The Education Committee now recommends the Council to amend this scheme, and the recommendations are prefaced by what is almost a statement of belief. So far as possible, no child or young person is to be debarred by poverty from obtaining the kind of education which will best prepare him for the career for which his talents and character best fit him, and the pecuniary emoluments should be sufficient to enable the scholars to obtain what is best adapted to their needs, but not sufficient to induce them to take up a course of study in order to obtain the pecuniary advantage attaching thereto. With these aims in view considerable changes are suggested which at first sight certainly all appear to be for the better.

The number of junior scholarships to be awarded to children between 11 and 12 is not to be fixed, but is to depend on the number who attain scholarship standard. The number awarded to boys is to be about equal to the number awarded to girls; this is to be brought about, not by lowering the standard of the boys, but by raising that of the girls. The standard remaining about the same, it is anticipated that the number may increase slightly.

No award of probationer scholarships is to be made after the present year. However, as some scholarships should be awarded to children at the age of 13 or 14 in order to provide for those who develop late, for those who happen to be debarred from competing for the junior scholarship owing, for instance, to ill-health, for those whose parents have just come within the county area, and for those who, though previously ineligible, have become eligible through their parents' misfortunes, the Education Committee proposes to introduce a new supplementary junior county scholarship. It is suggested that these scholarships should in some cases be merely maintenance grants to children holding scholarships offered by schools or endowed charities, or occupying the free places in secondary schools provided in accordance with the regulations of the Board of Education. Where a district is insufficiently supplied, then free places in L.C.C. schools may be given. The number is not to exceed 300, and to be divided equally between boys and girls. The age limits in 1910 are to be 13 and 15, after that 13 and 14. The maintenance grants are to be the same as for junior scholars of corresponding age and income, viz., incomes not over £160, £6, £15, £15; incomes over £160 and not over £300, nil, £10, £10, in the first, second, and third year respectively. These scholarships are to be awarded on the result of examinations conducted by the schools and upon the consideration of the report from the candidate's previous school. The free places are to be open to all candidates whatever their religion or that of their parents.

Junior and supplementary junior county scholarships provide for the education of children up to the age of 16, so there is now no need that the age for competition for intermediate scholarships should be as low as 15. The limits are, therefore, in future to be 16 and 17, excepting in 1910, when pupils attending elementary schools are to be admitted between the ages of 15 and 17; and pupils now in elementary schools wishing to compete in 1911 are to be recommended to take steps to secure transference to secondary schools under the regulation respecting free places. These modifications are due to the fact that pupils must cease attending elementary schools before the commencement of the school year in which they will attain the age of 16.

The maintenance grants attached to intermediate scholarships are to be reduced. They are at present £25 a year for scholars under 16, £30 between 16 and 17, and £35 over 17. In future they are to be £15, £20, and £25 for the first, second, and third years respectively when the parents' incomes are not over £160; £10,

£15, and £20 when the parents' incomes are between £160 and £300; and nil, £10, and £15 when the parents' incomes are between £300 and £400. The reason for the change is that the comparison of the present grant with that attached to the bursaries for intending teachers produces an impression that the intellectual standard expected of an intending teacher is less than that required for other callings. It is also suggested that it is inadvisable to earmark scholarships for candidates intended for the teaching profession, and that but for the Board of Education's regulations as to grants for bursaries, the bursaries of the L.C.C. would be merged in the intermediate scholarships. Hitherto 100 of these scholarships have been awarded annually, 70 to boys and 30 to girls. In future the number is to be 300, divided about equally between boys and girls.

The method of award is also changed. Hitherto an examination has selected the recipients very successfully; this examination after 1910 is very probably to be discontinued. In 1910 the award is to be made on the result of the January Matriculation examination of the University of London or of the School Leaving examination of the University in December, 1909, or of the Intermediate Scholarship examination. In the "Scholarships Handbook, 1909–1910," an announcement is to appear that in the year 1911 the awards will be solely on the results of the Matriculation and School Leaving examinations of the University of London.

Twenty of the intermediate scholarships for boys were and are still to be commercial, tenable only at particular schools; and as all the intermediate scholarships are tenable at those schools, it has followed that the 20 commercial scholarships have been taken by the boys at the bottom of the list, and there has been considerable discontent at the requirement of tenure at the specified schools. In order to remove this it is proposed that these commercial scholarships shall carry an annual grant for travelling expenses not exceeding £5, provided that the scholars reside more than two miles from the nearest school.

It is further proposed to increase the number of senior scholarships in 1912, but no number is included in the recommendations, though it is pointed out that if the number is to be proportionate to the junior and intermediate, it should be about 150, an increase of 100 on the present 50.

The Education Committee has come to the conclusion that it is impracticable to revive the old system of apprenticeship, and that preparation for skilled industries must be by training in trade classes at such institutions as the polytechnics and the Central School of Arts and Crafts. Some 300 such scholarships have been awarded, and it is proposed to increase the number awarded annually as the accommodation in the trade schools permits until the number of additional ones is about 300, making about 600 in all. These scholarships carry with them maintenance grants varying from £6 to £15 for boys and from £8 to £12 for girls.

Domestic economy scholarships are open to girls leaving elementary schools at the age of 14, and are designed to train the holders for home-life. It has been found that many girls take up wage-earning occupations. That for which they are best suited would be domestic service but for their age, which debars them from good posts. Those who do become servants take inferior posts, which give them a distaste for the work, and, in some cases, undo the good of the domestic training they have received. It is proposed that in some cases the course be increased to two years, so that the girls may receive a better general education and a more practical training in home organisation, and that they may thus be fitted to obtain better posts as domestic servants and that the results may be more lasting. The maintenance grants attached to these scholarships is £3 a year.

Art scholarships and exhibitions have been of three kinds: school of art scholarships for day students intended for designers, illustrators, teachers, and others; artisan art scholarships for evening students intended for artisans engaged in a trade; and junior artisan evening art exhibitions, open to both the previous classes of candidates. These, it is suggested, should be replaced by:

Sixty art scholarships for full-time day students, giving free education and a maintenance grant to be fixed after consideration of the candidate's circumstances, but not to exceed £50 a year. Thirty are to be awarded to men or women engaged in artistic crafts, and thirty to designers, illustrators, teachers, and others. The length of tenure is two years, with a possible extension to three.

One hundred and ten evening art exhibitions, carrying grants of £3 and free admission for the same time to classes open to men and women engaged or intending to be engaged in artistic crafts.

Fifteen scholarships in science and technology for full-time day students at polytechnics and institutions of university rank, open to men and women engaged in skilled trades or industries who have attended evening classes in similar institutions. These scholarships include free education and a maintenance grant which must not exceed £50 a year for two years.

One hundred and eighty evening exhibitions in science and technology, open to men and women engaged or intending to be engaged in skilled trades or industries, carrying grants of £3 and free admission to evening classes for two years, with a possible extension for a third year.

The estimated annual cost of the scheme is £20,000 less than that of the scheme authorised in 1905. The cost of a junior scholarship, including free education and maintenance, is £85 (this is the annual cost of conferring one junior scholarship each year, so that if the average period during which a junior scholarship is held is four years, the average cost of one junior scholar for one year is £21 5s.); of a supple-

mentary junior scholarship £68, and in the case of maintenance only £31; the cost of an intermediate scholarship is, by the changes introduced, reduced from £129 to £72; the senior scholarships cost about £200; and those in domestic economy about £30.

What is the general effect of the changes? When the scheme is in full working, a saving of £20,000 a year, which sounds a large sum, though only about 7 per cent. of the estimated cost of the 1905 scheme. An examination fewer; and this, though the examination is a good one that has most effectively selected children capable both in intellect and character of profiting by further educational opportunities, cannot but be a relief to our over-examined pupils, and a step towards severing the bonds which fetter true education. The one doubt is as to the number and quality of the scholars selected by the Matriculation and School Leaving examinations. The selection will contain a greater variety of talents, of better attainment in English, of lower uniform attainment in science; but will the average scholarship standard be maintained and will the future scholars be as capable as the past?

The decrease in the number of junior scholars, the increase in the number of intermediate, and the promise of future increase of senior, cannot but commend themselves to everyone who feels with the Education Committee that poverty should not prevent anyone from obtaining the kind of education that will prepare him for the career for which his talents and character best fit him, and that the highest education should be within the reach of all who can profit thereby.

ATHLETICS IN A MIXED SECONDARY SCHOOL.

By W. W. SAWTELL, B.A.
Headmaster of Uxbridge County School.

ONE of the problems of a co-educational school being the arrangement of the games, the following notes are written in the hope that they will prove useful to readers of THE SCHOOL WORLD who are similarly situated. At the Uxbridge County School (where boys and girls both in and out of the class-room are educated as much as possible alike), except for an occasional game of tennis among the senior pupils, we have not yet tried the experiment of mixed games, chiefly because of the risk of over-straining the girls in their efforts to reach the boys' level of efficiency. But we have contrived to retain the co-educational principle by awarding points for boys' and girls' games alike, which count towards the house championship and trophy.

When we decided to adopt the "house" system, soon after the opening of the school in 1907, the problem arose as to the basis upon which the divisions should be formed. The second master hit upon the happy idea of taking concentric circles, with the school as centre, and with radii respectively of one mile, two, and seven miles. Those pupils living in the school district were to be called the "School House," those in the intermediate ring, most of whom lived in the township of Uxbridge (the school being outside) were to be the "Town House," while the outlanders (hailing from North Middlesex, Harrow, Staines, and parts of Buckinghamshire) were to form the "Country House." An ordnance map was obtained, circles were drawn, and a beautiful copy of the map, with its artificial circles, was made by a handy fifth-form boy and posted up.

Keen interest was shown by the pupils in finding to which circle or ring they belonged. It happened quite fortunately that these arbitrary divisions contained almost equal numbers of house members, about fifty coming from each district. Each of the houses was placed under the care of a house master and mistress, and the members were urged to cultivate a spirit of mutual helpfulness and interest, as in a large family, and to unite in exercising a friendly rivalry towards the other houses. In this way the basis for competition in games was established.

The next move was the kind offer of a handsome challenge shield, in oak and silver, by one of the governors. Games were arranged between the houses, and two hours every afternoon in the summer term were devoted after school to cricket, tennis, and netball. Interest was further aroused by the taking of snapshots on the field, the photographs being printed and mounted by one of the boys, and posted up at our first Exhibition of Work and Parents' Meeting in July last year. At the Christmas prize distribution the shield was presented, amid much enthusiasm, to one of the prefects of the Country House.

The games being organised thoroughly, it was thought that we might attempt something more ambitious, and one Saturday afternoon in June this year was kept open for our first athletic sports. The mention of sports suggested prizes. We had no money, and were too independent to beg. The idea was then conceived of doing without prizes. The honour of the house was to be the incentive, while recognition of individual prowess might be made by means of real laurels, after the old Greek custom. The plan being explained to the school, it was taken up with the utmost heartiness. The wife of the chairman of the governing body consented to distribute the trophies, and several of the governors promised to act as judges. Meetings of the various houses, under the presidency of the house masters and mistresses, were held, at which everyone sound in wind and limb was urged to train.

The keenest enthusiasm was shown in the preliminary trials, the daily organised games being temporarily suspended in order to test each competitor and finally to select the fittest. Graduated posts and a cross-bar for the high jump were made in the manual training school, a "pit" was dug for the long jump, and the field carefully measured out. Committees were appointed, and the hundred-and-one things to be decided upon discussed. The various events were first to be chosen. The usual comic element of

athletic sports—egg-and-spoon, obstacle, and three-legged races—were severely left alone, the idea being to provide a purely athletic contest in which the honour of the houses should predominate. The question then arose as to which of these should be open to the girls. At length the following programme was arranged: 100 yards, 220 yards, 440 yards, relay race (1 mile), cricket ball and netball, tug-of-war (eight in each team), 75 yards skipping race (girls), high jump, long jump (boys), mile (boys).

Three competitors were to be chosen from each house to represent respectively the senior boys, senior girls, junior boys, and junior girls, thus giving four sections to each event. Great eagerness was shown by the girls to join in the half mile, and even in the mile race, but the veto of the headmaster was given against this, even the quarter mile being considered rather venturesome. In the absence of official medical inspection, careful provision against risk was made by obtaining the written consent of the parents to their children's engaging in the contests. The high jump proved a difficult problem. Should the girls join in this feat? After a few lessons from the drill mistress, however, the ease with which they negotiated it was surprising, and it was decided to include it in the events while the boys' long jump was going on. They were allowed also to try a tug-of-war.

The problem then arose as to how to equalise the maxima of points possible to the various houses. The points gained by both boys and girls were to be combined, but the girls must be allowed, if possible, to contribute as many as the boys. Hence it was decided to balance the boys' long jump against the girls' skipping race, and throwing the cricket ball against placing the netball. The mile race for the boys was to have been balanced against the girls' half mile, but it being considered wiser to exclude the latter, the boys found themselves in the privileged position of being able to score nine more points for their houses than the girls. In each event, the first competitor could score four points, the second three, the third two, while one point was assigned to all others who finished a race. Thus it was possible for even the weakest competitor to gain some credit for his or her house.

Next came the question as to how the "mixed" element might be recognised and utilised. The relay race was chosen for this purpose, boys and girls helping one another to accomplish the same race. To strengthen the idea of mutual co-operation, a working party of elder girls was selected by the senior mistress to make sashes for the house colours, rosettes in the school colours, and, above all, the laurel crowns. In order to preserve as far as possible the classical tradition, the committee had been asked to obtain a supply of bay leaves for the crowns, but this was found to be difficult, and we had to fall back upon laurel leaves, the nearest approach in the neighbourhood to the bay. As for the sashes, green sateen (the most appropriate colour) was used for the Country House; gold for the Town—perhaps because money is made there, though some bold wag suggested a dyspeptic significance; while red was assigned to the School—"because," it was said, "they are always red-hot." Three days before the sports the sewing began. All were keen to discover the actual form the wreaths should take, and the way they should be worn. Illustrations in the Classical Dictionary settled these questions, and it was decided to build the crowns on green milliner's wire. Many busy fingers were plying the needle right up to bedtime, and the shades of Thomas Hood seemed to hover around in the chill night air of early June.

At length the long expected day arrived. The torrential rain which had fallen continuously during the previous day seemed hardly likely to hold off; but the morning was spent by boys and masters in roping the course and cutting the grass. Notices were posted up showing the starting-point, the winning-post, and the various events, and requesting visitors to assist in keeping the course clear. All these had been worked with Indian ink and brushes in the art classes, and looked, as the local papers put it, as though they had been done by the printer's hands.

An easel and blackboard, with coloured chalk to represent the three houses in recording the victories, a platform, and a table with the crowns upon it, having all been placed in readiness by the boys, a fine afternoon was the one thing needful. Fortunately, this was realised, and all went off with the greatest success.

The keenness shown was most gratifying, particularly in the relay race, in which successive groups of boys and girls carried house-colour flags along alternate sections of the course, passing them with lightning speed to their respective house compatriots. The anxiety on one little girl's face while waiting for her predecessor, and her distress when, in her eagerness to start, she dropped the flag, formed quite an exciting episode. The girls, in their navy-blue drill costumes, brightened by the house colours, formed in their high jump a pretty example of the grace and skill with which girls can be taught to execute a really difficult gymnastic feat.

Another picturesque feature was the girls' skipping race. The absence of the usual "pot-hunting" spirit, with its attendant jealousies and disappointments, was quite pleasing, as was also the behaviour of the spectators, pupils and parents alike. Cheering of individual competitors by name had been discouraged, and there were instead rousing cries of "Keep it up, School!" "Now then, Country!" and so on, which showed how keen was the enthusiasm for the houses. Then the busy recording cameras also provided interest.

The closing ceremony proved no less successful. First, the youngest little girl, on behalf of the whole school, presented the chairman's wife with a bouquet of red tulips and maidenhair fern—to represent the school colours—and then the laurels were placed upon the victors' heads, who

received their honours kneeling, each boy acknowledging them with an obeisance, each girl with a graceful old-time curtsey. Speeches and cheers concluded an attractive and probably unusual scene.

One boy, having won eight events—though some of his crowns were given to a younger competitor—secured the highest score for the Country House, and himself sprang suddenly into fame. His achievement, noticed by several of the London evening papers, resulted in a visit from a representative of one of the illustrated dailies, who snapshotted him in various attitudes. With this exception, unsought by us, individualism in our sports was entirely at a discount.

THE CONSTRUCTION AND READING OF WEATHER MAPS.[1]

By E. GOLD, M.A., F.R.Met.Soc.

II.

DISTRIBUTION OF WEATHER IN CYCLONES.

WE have seen how cyclones move across the map, but we want to know further what wind and weather they will bring. Briefly, we may say that in European cyclones the weather is warmer and damper in front than in the rear; that the region of greatest rainfall is in front, and that it is greater on the left than on the right. Usually, indeed, the rain begins earlier on the right, but it does not last so long. Frequently a cyclone is preceded by wisps of cirrus (feather-clouds) drifting across the sky; sometimes the outer front is marked by a thick, rope-like cloud extending along the horizon.

The rule that the temperature is higher in front than in the rear of a cyclone is more accurate in its application to the sequence of weather at a single place than to the synchronous distribution of temperature in a system. Thus the temperature in front of a cyclone advancing eastwards over the North Sea may be lower than the temperature in the rear over England and Ireland. But it is very rarely the case that the temperature over Ireland, say, is higher in the rear of a cyclone than it is in the front. In fact, a cyclone is not an invariable system, and the temperature and weather associated with it change as the cyclone progresses.

In the Northern Hemisphere the wind blows round a cyclone in the direction opposite to the direction of motion of the hands of a watch lying face-upwards. (For the Southern Hemisphere the direction is reversed.) *This does not mean that the actual paths of the air are circles.* The cyclonic system is moving forwards at a rate comparable with the wind velocity, and the paths of the moving air depend on this fact. Roughly, we may say that the actual paths are more curved on the left side and less curved on the right side than they would be if the storm-centre were at rest.

[1] The first article appeared in the July, 1909, number.

The wind is always more or less incurved towards the centre, most on the north-east side, least on the south-west, on the average. Perhaps the simplest way of remembering the relation between wind-direction and isobars is "Buys Ballot's Law," viz., "Stand with your back to the wind and the lower pressure is on your left hand." Another law, Broun's, may also be noted here, "Stand with your face to the wind and the clouds will come from the right." The cause of the fact expressed by Buys Ballot's Law is the rotation of the earth, which tends to make every body moving on the earth's surface turn to the right. Of course, even if the earth did not rotate, the air near the centre of a cyclone would still have a rotary motion, but the direction of rotation might vary, just as that of water running out of a wash-basin is variable, and can be fixed at the beginning, according to our wishes.

The pressure difference between two consecutive isobars, divided by their distance apart, is a measure of the rate at which the pressure falls, and is called the gradient of pressure. For the same latitude and air-density the wind-velocity is proportional to this gradient if the isobars are nearly straight lines on the map, and friction is absent or proportional to the velocity. But for cyclones and anticyclones the relation is not quite so simple; and it is not the same for cyclones as for anticyclones. If the distance between the $\frac{1}{10}$ in. isobars is 40 miles, the theoretical velocity for straight isobars and no friction is about 80 miles per hour. But if the isobars are parts of circles of 120 miles radius, the velocity is only 40 miles per hour for cyclones; and in an anticyclone such a gradient could not exist. In fact, in anticyclones there is a limit to the value of the gradient and the velocity of the wind, depending on the curvature of the isobars, or more strictly on the curvature of the path of the air. For example, we cannot have a long-continued wind as great as 20 miles per hour within 100 miles of the centre of an anticyclone. This is owing to the fact that the effect of the earth's rotation, which is proportional to the velocity of the air, is insufficient to balance the pressure outwards and the centrifugal force, which is proportional to the *square* of the velocity if this latter is too great.

The incurvature of the air at the earth's surface is mainly due to friction. Over the ocean and in the upper air at 1,000 metres altitude, the wind blows very nearly along the isobars. At very high altitudes the wind blows outwards from the centre of a cyclone, nearly perpendicular to the surface winds.

It is found that as a cyclone passes over a place, the wind does not change its direction perfectly regularly; winds from some directions persist unduly more than others. For a rapidly moving cyclone south to south-west and north-west winds prevail, while for slow-moving cyclones south to south-west and east to north-east winds are more persistent, and the transition

from one direction to the other is comparatively rapid. A discussion of the origin of cyclones would lead us too far, but it may be well to state that the primal cause is in all cases unequal distribution of temperature over the earth's surface. But whether the cyclones are caused directly by the rising of air over places of relatively high temperature, or arise from the interference of oppositely directed air currents, is a question not yet settled. The prevalence of certain winds appears to favour the latter view.

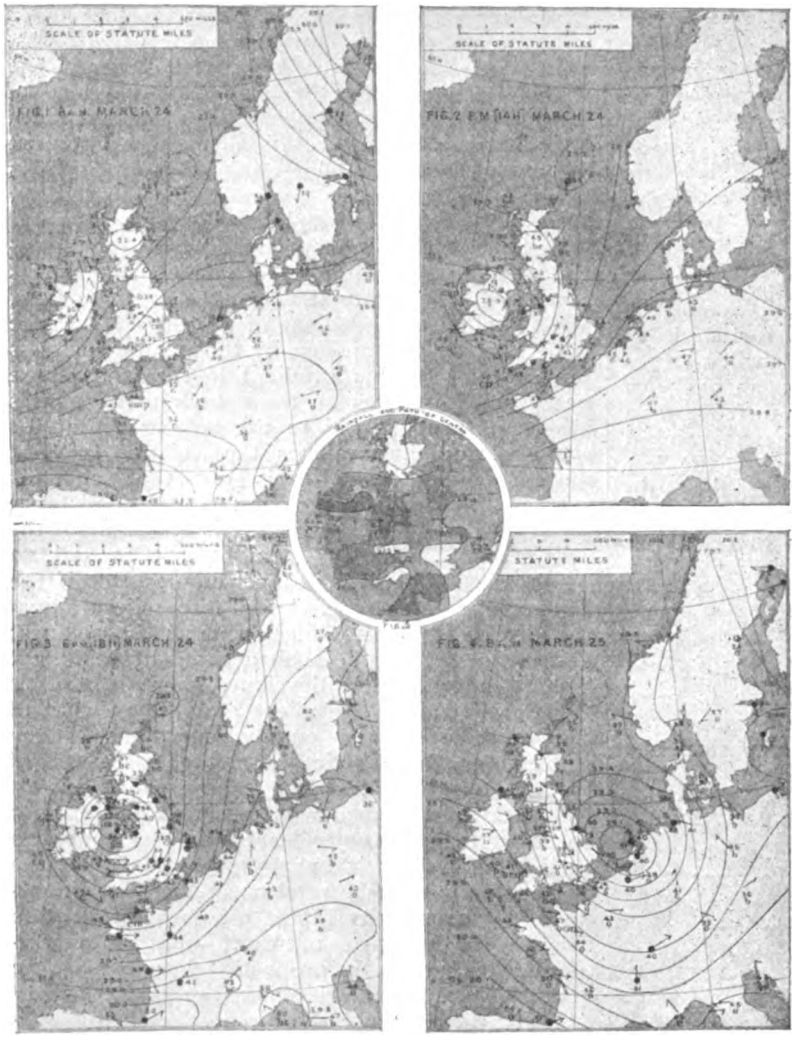

Fig. 5.—●=rain, *b*=blue sky, *bc*=half clouded, *c*=three-quarters clouded, *o*=overcast, *q*=squally, *p*=passing showers, the figures denote temperature F.

There is a great difference between fast and slow cyclones as regards the origin of the air taking part in the circulation. Fast cyclones take in practically all their air from the front right-hand side, and throw out a nearly equal amount on the same side in the rear. Slow cyclones draw air from both sides; that from the right flows towards the centre, while that from the left curls round the rear of the moving system.

Fig. 5[1] shows the passage of a fast cyclone over the British Isles and the weather associated with it.

Fig. 6 shows the distribution of weather and rainfall relative to the centre of the cyclone; *e.g.*, a person originally in the shaded area, say at Cork in Ireland, who travelled east at about twenty-five miles per hour, would experience continuous rain. The lines marked with arrows denote the actual paths of the air relative to the centre. For a slow depression the excess in the rainfall to the left of the path is much more marked.

If we trace the sequence of weather at a single place to the right of the path, we find that the barometer will begin to fall but slightly before the rain comes; frequently the wind will back from west or north-west towards south-west, and cirrus cloud appear in the sky before the barometer gives any indication of the approaching disturbance. Almost simultaneously with the fall of the barometer the sky will take an ugly look and soon become covered with cloud like a carpet. The rain will continue generally as long as the barometer keeps falling, and the wind will be strong from south-west. Almost suddenly and simultaneously, the rain will cease, the wind change to some point north of west, and the barometer cease to fall. The gloomy appearance will disappear from the sky, which will be partially covered with detached, rapidly moving cumulus, through which the blue sky is seen. The air will be clear and fresh, and although there may be occasional passing showers, these will not last long. To the left of the path the wind in front of the depression will be from south-east, while the sky may still be clear or covered with a thin veil of cirro-stratus, causing haloes round the sun or moon. The barometer will fall gradually and the sky become overcast, while the wind backs towards east. Rain will set in rather later than for a place to the right, and will continue for a comparatively long time even after the barometer has begun to rise and the wind changed to north of east. The rainfall is heaviest about the time when the barometer is at its lowest point, after which it gradually

[1] Figs. 5, 6, 8, 9, 10 are reproduced by kind permission of the authors and H.M. Stationery Office from "The Life History of Surface Air Currents," by Dr. W. N. Shaw, F.R.S., and R. G. K. Lempfert, M.A.

decreases in intensity. After continuous rain has ceased, the sky will be similar to that described for a place on the right of the path. For a place over which the centre passes a similar sequence of weather will be experienced, but the wind will abate near the centre and blow as hard as ever after it has passed, but from the north instead of from the south.

SECONDARIES.

Frequently, as a cyclone progresses, the isobars at some place will become unusually wide apart, and eventually a small shallow region of low pressure will appear between them, having its own wind circulation, generally rather feeble. Such a region is called a secondary. They are most frequently found to the south of the primary cyclone, and they appear to have a special predilection for the English Channel. Sometimes they move along it, and then turn northwards up the North Sea. At times the primary region of low pressure is not a very well defined cyclone, but a large area in which several secondaries are found; these appear and disappear and move in ways most disconcerting to the forecaster. They are generally associated with considerable rainfall. In fact, a few years ago, during the passage of one of these secondaries along the English Channel and North Sea, rain fell in London almost continuously for forty-eight hours; and the forecaster at the Meteorological Office had sufficient faith in the rain-producing tendency of this system to issue, on two consecutive mornings, forecasts of "rain" for twenty-four hours. An example of a secondary appears to the north of the cyclone in Fig. 5.

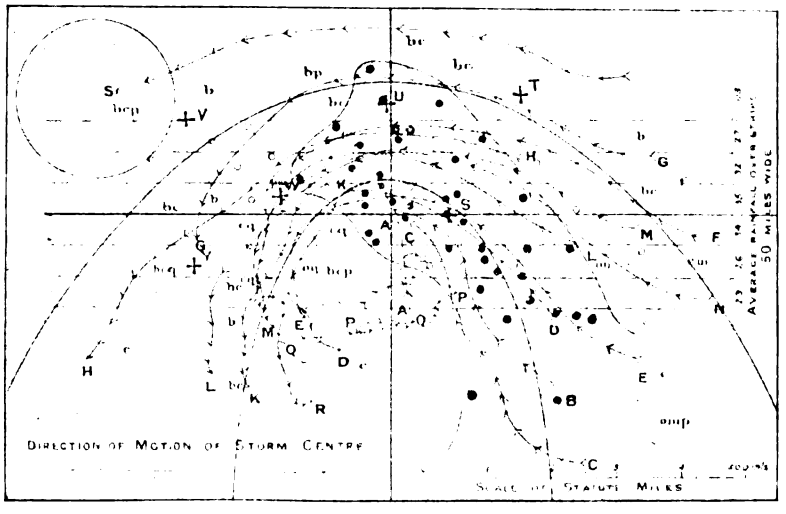

FIG. 6.

The rain produced during the passage of a secondary used to be a puzzle because the barometer changes scarcely at all throughout the time when it is raining. But actually the approach of a secondary is generally announced unmistakably to an observer who knows that a cyclone is passing over the country, because the barometer and wind-vane do not follow the course they would take if the primary were passing on unchanged. The beginning of rain in a secondary is sometimes marked by a small, quick rise or fall of the barometer; but this is by no means a certain indication of the long-continued rain of a secondary, because frequently these movements of the barometer occur during the passage of a cyclone which has no secondary associated with it. They are then generally accompanied by violent gusts of wind, a short, heavy rain squall, and a change in wind direction. Places which experience these effects at the same time lie on a line radiating more or less from the centre of the cyclone. Their cause has not yet been satisfactorily explained. They are in some respects similar to the Böen which occur frequently on the Continent. An example of such a phenomenon is given in Fig. 7. Notice the practically simultaneous occurrence of a rapid jump in the barometer, a fall in temperature, a great increase in relative humidity, a sharp, heavy fall of rain, a fall in wind velocity, and a change in direction.

Fig. 8 shows a similar phenomenon in England, which took just over one hour to travel from Falmouth to Plymouth. These phenomena probably occur at the line of separation between two different air currents, the colder of which is, as it were, bursting under the other. Margules has shown that the energy necessary for such storms can be furnished from the excess of the potential energy of the system in its initial state over the corresponding energy in the final state when the colder air underlies the potentially warmer.

ANTICYCLONES.

Anticyclones are less regular in form than cyclones and the inner isobars often resemble ellipses and circles pulled out of shape as much as possible. Near the centre there is calm, and for a great region the winds are very light. Consequently, an anticyclone cannot change its position or disperse rapidly except by motion in the upper air; and, as a matter of fact, anticyclones are comparatively inert masses of air, entering only slowly into the general air circulation. In general, the temperature near the centre of an anticyclone is lower than the average temperature for the time of the year, especially in winter. Warm, sunny days and cold nights are characteristic of an anticyclone in summer: frequently the mornings are misty. There is

little probability of heavy rain near the centre, but slight showers are not infrequent, especially in summer. In Continental places an anticyclone in winter is usually accompanied by keen frost, and in the great winter anticyclone of Siberia occur the lowest temperatures measured on the earth's surface: nearly as low, in fact, as the lowest temperatures recorded in the upper air up to heights of 40,000–50,000 feet. (It is

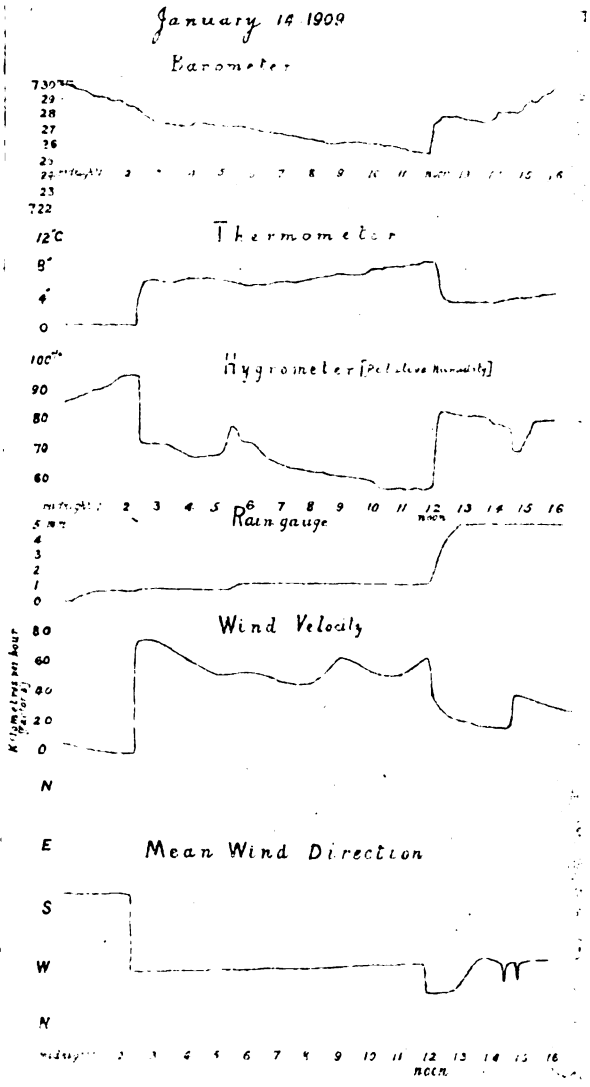

FIG. 7.

interesting to note that the lowest temperatures observed anywhere have been recently recorded in the upper air over Lake Victoria Nyanza, considerably lower than those observed at great heights near the Arctic circle.)

V-SHAPED DEPRESSIONS.

These are furrows of low pressure running between two adjacent regions of high pressure. Although the isobars are conventionally drawn as smooth curves, Lempfert has shown that, in some cases at least, there is an actual discontinuity at the point of the V, where the pressure is lowest, and that the line, joining the places where the discontinuity occurs at the same instant, travels across the country at about thirty miles per hour. Usually the mouth of the V is towards the north, and along the line of discontinuous pressure the wind changes abruptly from south-west to north-west, and violent squalls occur. Hence the term "line squalls" has been applied

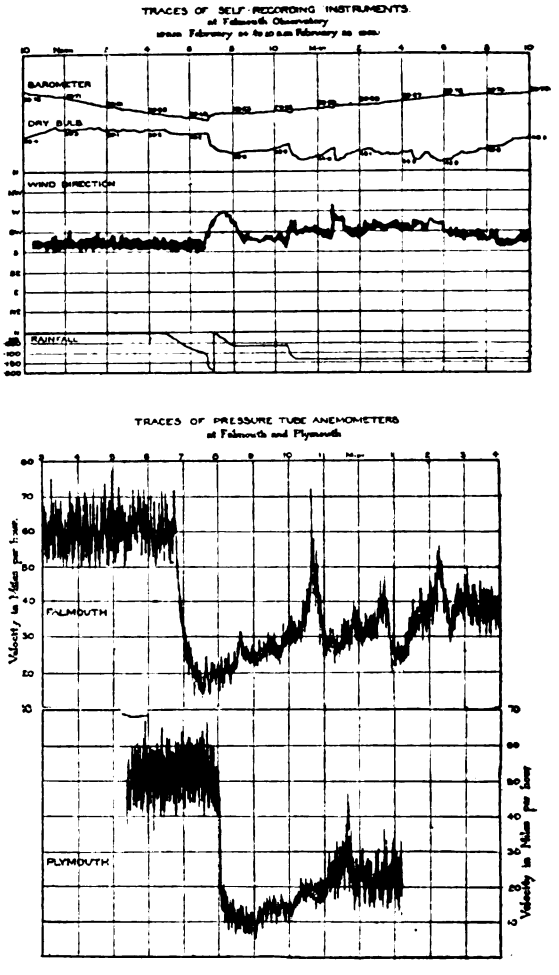

FIG. 8.

as descriptive of their main features. Sometimes a V is formed to the south of a cyclone centre, but at other times no cyclone can be detected in the region covered by the map. The passage of a V may bring about a change in the general type of the prevailing weather. We see roughly that this may be so if the V is caused by the approach of a new anticyclone towards the one on which the weather has been dependent. The passage of the V may mark the partial coalescence of the two systems or the absorption of the former by the new aggressor.

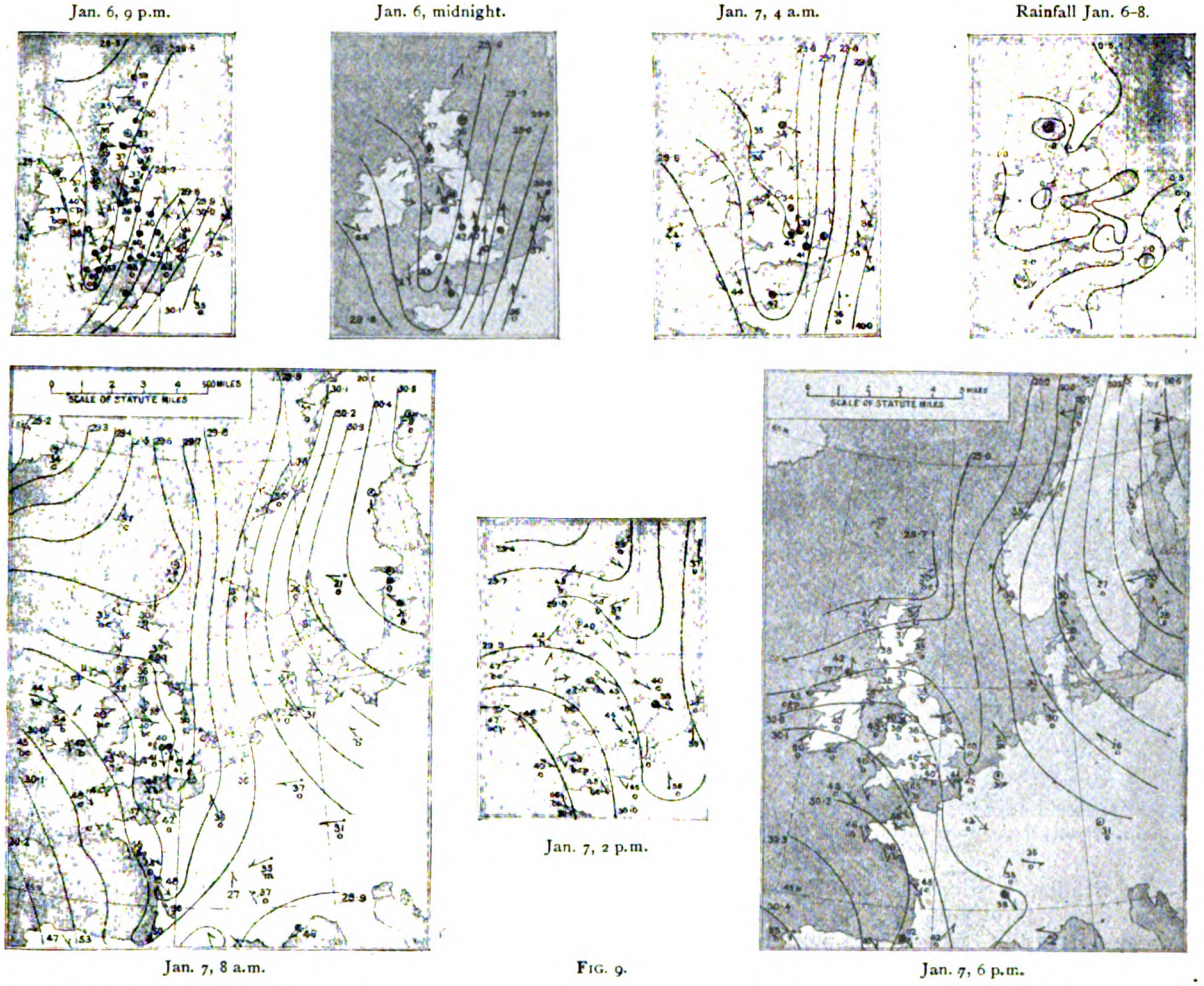

FIG. 9.

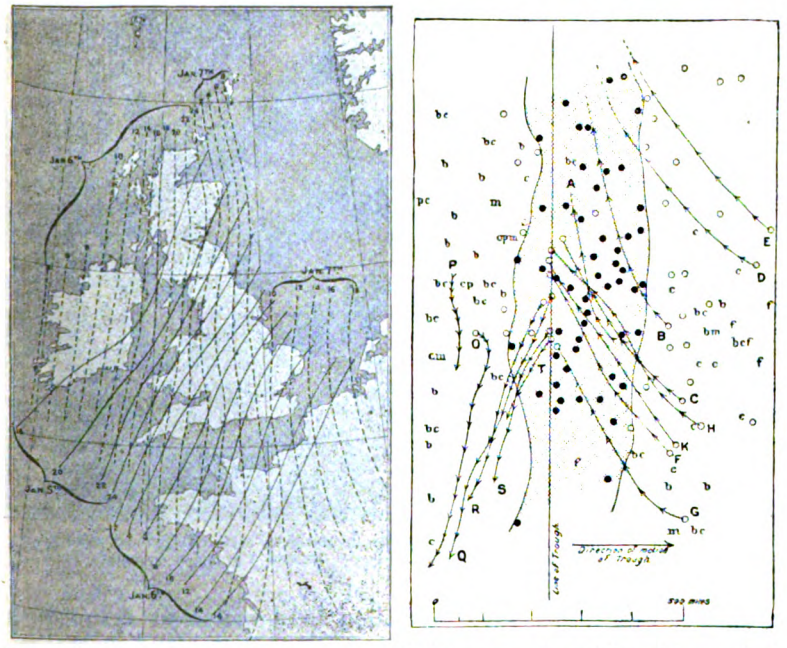

FIG. 10.—The broken lines in the diagram on the left indicate consecutive positions of the trough of lowest pressure. The continuous lines join stations which came simultaneously under the influence of the V

Fig. 9 shows the passage of a V across the country in January, 1900. Fig. 10 shows the manner in which the trough or line of discontinuity advanced across the country, rotating a little so as to point always nearly pole-wards. The sloping of the continuous lines indicates that the influence of the V extended further in advance of the trough in the north. The second diagram shows how practically all the rain falls in front of the V, where the air is flowing from the south-east relative to the trough. This is probably due to the north-west current flowing under the moist southerly current, the air in which expands and cools with ascent and produces condensation and rainfall.

PLANT ECOLOGY.

By Ernest Evans,
Technical School, Burnley.

THERE are few branches of botany which offer such a variety of topics for study as work in the field, and the outlay on the necessary apparatus is within the reach of all. A good Flora, such as Sir J. D. Hooker's "The Student's Flora of the British Islands," a hand lens magnifying five diameters, a pair of forceps, a knife, pencil and note-book, and the student is equipped for the study of wild plants. The names of the plants can be obtained from the Flora, and their peculiarities, with sketches, should be described in the note-book. The following is an outline for the guidance of students in studying ecology or the mode of life and structure of plants in their native haunts.

Fig. 1.—Hydrophytes—Water Crowfoot and Rushes growing in water, with Sycamores in the distance.

The Action of Environment on Plants.—The surroundings of a plant, such as light, water, heat, soil, the action of animals and other plants upon it, can be said to constitute its *environment*. If the natural home of a plant is in a soil rich in water, its leaves will be large and thin, and numerous stomata will be developed in the epidermis. The roots of the plant which are fixed in a soil rich in suitable water absorb more water than is required for the plant's nutrition, and the excess can be given out as aqueous vapour through the stomata. Thin leaves and numerous stomata are associated generally with roots fixed in a soil rich in water. On the other hand, plants which usually grow on bare mountain slopes have leaves which are either small and thick or needle-shaped, the stomata being scanty and deeply sunk. This arrangement is to prevent loss of water. Thus small leaves and few stomata co-ordinate the plant with the scanty water supply in the soil.

The Struggle for Existence Among Wild Plants.—Plants struggle among themselves for food and light, and contend with extremes of heat and cold. In the soil the roots of plants are constantly struggling against each other for food, and as they grow in different directions, those which reach and can use the nutritive material present have the best chance of surviving. On the surface of the soil, the more slowly growing plants are often covered by the foliage of their more vigorous competitors, with the result that the amount of light which they receive is not sufficient for their needs, and they either live on in an enfeebled condition or die. The daisy and plantain in a lawn have a great advantage over the other plants growing there, for they possess rosettes of leaves which prevent the light from reaching their competitors, and this fact tends to kill the latter.

Natural Selection.—From the struggle for existence which plants have to contend with, there arises the *survival of the best adapted*. The selection of the best adapted plants by natural means, in contradistinction to such selection by man, is known as natural selection. If a plant produces a variation in its structure, or some contrivance which gives it an advantage over other plants, and *if* this advantage can be transmitted to its offspring, the offspring will have an advantage over its competitors. The seedlings of the white clover, when grown in the shade, produce long stems and petioles so as to bring the leaves nearer to the source of light; but if grown in bright light from the first, the stems and petioles are thick and sturdy. The spiræa grows to perfection in a marsh or damp ditch, and under such conditions may stand several feet high. On Beachy Head, where the soil does not exceed one inch in thickness—and even this is generally dry—the spiræa stands only a few

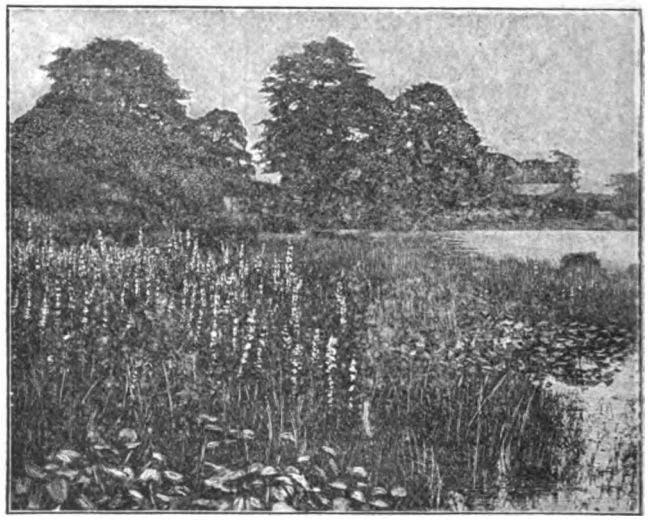

Fig. 2.—Foliage leaves of Marsh Marigold in the foreground, with purple Loosestrife and Rushes. In the distance a group of Sycamore Trees can be seen.

inches high, and the characters of the leaves and other parts of the plant vary in appearance from those growing under more favourable conditions of life.

DIVISION OF PLANTS BASED ON ECOLOGY.—It is possible to divide plants, according to their mode of life, into a number of classes. These are as follows:

(1) *Hydrophytes* are plants which live submerged in water.

(2) *Hygrophytes* are plants which live in damp places, such as the sides of ditches, ponds, and in marshes.

(3) *Mesophytes* are plants which grow in an intermediate position, and where water is sufficient for life.

(4) *Xerophytes* are plants which can live through long periods of drought or can stand dry periods because of certain contrivances to prevent loss of water.

CHARACTERS OF HYDROPHYTES.—The plants which live in water differ in structure from those which live with their roots fixed in the soil, for some hydrophytes do not possess roots but remain suspended or float in the water. Even if roots are present they are not well developed, and at the most only serve to fix the plant to the mud at the bottom of the lake or pond. Root-hairs are generally absent; and in most cases adventitious roots are produced from the nodes of the stems. The stems are long, slender, and very flexible. The stems generally contain large cavities which are full of air, and these enable them to remain suspended in the water. The air in the cavities may also be used for respiration. The leaves show a remarkable adaptation to environment. Some water plants possess two kinds of leaves, viz., *submerged* and *floating*. The submerged leaves, when present, are finely divided; and they are without cuticle and stomata. It seems probable that the finely divided leaves of the water-crowfoot and similar plants offer little resistance to the water. Such leaves also contain numerous air-cavities. The whole of the food which a totally submerged plant requires is obtained from the water in which it lives. In addition it will not be exposed to the same extremes of heat and cold as a land plant, for the temperature of the water varies within very narrow limits.

The water plants with floating leaves can obtain carbon dioxide and oxygen from the atmosphere through the stomata on the upper surface of the leaves. The water and mineral substances required are obtained from the water by the roots, stems, submerged leaves, and the under side of the floating leaves.

It seems to be a great advantage for a water plant to possess both kinds of leaves; for when the water dries up, the floating leaves persist and enable the plant to live on through the dry period.

CHARACTERS OF HYGROPHYTES.—The Hygrophytes more nearly approach the Hydrophytes in structure and mode of life than either the Mesophytes or Xerophytes, for the roots and root-hairs are not well developed, and no cuticle is present. This state of affairs enables water to be absorbed by any portion of the roots. Both the stem and root contain large air-spaces, and this suggests that Hygrophytes are closely related to Hydrophytes. Some of the air which enters the stomata of the aerial parts of such plants finds its way into the large cavities in the submerged stems and roots, and this air is used for respiration. The leaves are large and possess numerous stomata; and may be arranged so as to guide the drippings towards the roots. Hygrophytes grow in ditches, rivers, ponds, marshes, lakes, and damp pools in bogs and on moors.

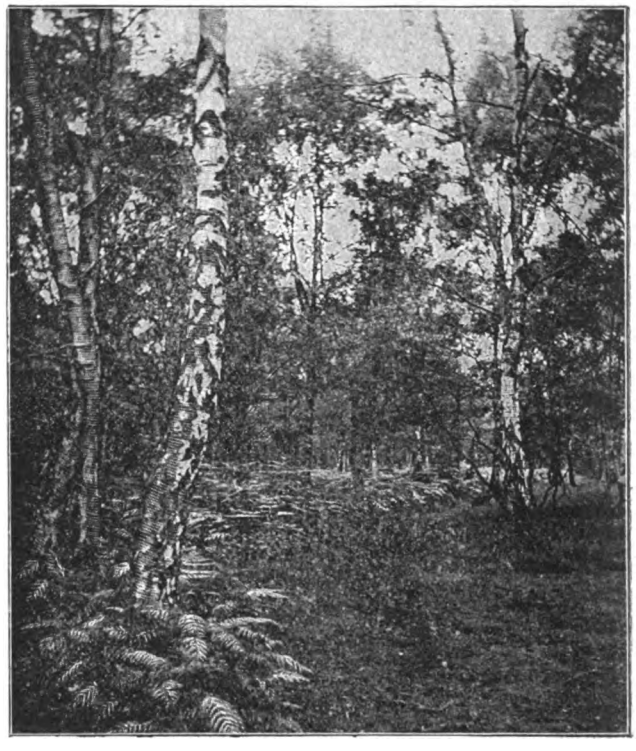

FIG. 3.—A group of Silver Birches with Bracken Ferns growing beneath.

CHARACTERS OF MESOPHYTES.—Nearly all forest trees and numerous herbaceous plants are Mesophytes. The oak, sycamore, elm, ash, and horse-chestnut are typical Mesophytes. Trees, such as the above, shed their leaves in the autumn, new ones being produced in the spring from the winter buds. Most of the herbaceous perennials are Mesophytes, and they possess underground stems; and even if the aerial parts die down in autumn, the life of the plants is carried on throughout the winter by these structures. Mesophytes possess well-developed roots and numerous root-hairs. The stems are generally large, strong, and may live for several years. The leaves are thin and large, and bear numerous stomata. Mesophytes live in soils rich in water and food materials; and in structure these plants

come between the Hygrophytes and Xerophytes.

Characters of Xerophytes.—The Xerophytes are plants which can live on a very small supply of water; and because of this important property they can withstand drought. Xerophytic plants live on moors, sandy soils, rocks, chalk soils, dry mountain slopes, limestone soils, dry mountain tops, dry hedge-banks, heaths, salt-marshes, sand-dunes (hills), bogs, and sandy sea-beaches.

Plants of this description possess certain contrivances to prevent excessive loss of moisture by transpiration. In some cases they can even condense aqueous vapour in the atmosphere, and the moisture thus obtained can enter the plant through the leaves or other structures.

Fig. 4.—Moorland view, showing Cotton Grass in foreground, with clumps of Heather, and Crowberry in mid distance. A group of Pines and Birches can be seen in the distance.

Plant Societies.—Along the sides of many of the Cornish lanes, the heath, gorse, and bramble live together; and on the moors of Lancashire and Yorkshire the cotton sedges, grasses, and mosses can be found growing side by side. Such collections of plants form *Plant Societies*. Plants live together because they need similar conditions for their full development; or they may aid each other in some way. For instance, the gorse collects nitrogen from the atmosphere through the tubercles on its roots; and the decay of the fallen aerial parts and its roots enrich the soil with compounds of nitrogen. These chemical substances can be collected by the roots of the heather and bramble, and in this way the gorse aids the nutrition of the other members of the society. Some plants, like the beet, which live to perfection in good soils, have been compelled by the stress of competition to put up with sandy sea-shores when they form societies.

Plants which require to be protected from the intense rays of sunlight grow in the shade of other plants, and flourish under such conditions of life. The purple loosestrife, rushes, marsh marigolds and osiers can be found along the banks of streams. Why? Because they all require plenty of water for their full development.

PERSONAL PARAGRAPHS.

"Q" has a grievance against the Board of Education, and has voiced it in the *Times*. Mr. Quiller-Couch is interested in secondary education: witness his recent series of English classics for schools, and the fact that he is vice-chairman of the Cornwall Education Committee and a governor of Plymouth College. Good secondary schools are few and far between in the two south-western counties, and the enterprise which attempts to supply them in sparsely populated districts is worthy of all encouragement. But, according to Mr. Quiller-Couch, though the Board has seen the need of special assistance being given to small schools in rural districts, it has now invented a formula by which to limit its responsibilities. Unfortunately the formula comes after the education authority has committed itself and sunk money. The formula complained of is (in Mr. Quiller-Couch's words): "The grant is to be refused wherever the school's income, *plus* the grant, will not amount to £750," the Board regarding this sum as the minimum amount on which a secondary school can be efficiently maintained. The truth of the formula is not substantiated by the Board's inspectors, and the result of its application will be to throw the cost of schools undertaken with the Board's encouragement on the already overburdened rates. It is to be hoped that the Board will find a way of continuing to encourage the smaller secondary schools, which are necessary in rural areas, though, of course, the cost of their efficient maintenance is proportionally greater. It is a national service to start and to help support such schools, and the money should be forthcoming.

* * *

It is about eight years ago that Mr. Bernard Tower took over the headmastership of his old school, Lancing College, and during that time great changes have been effected. Numbers have been doubled, new buildings have been begun, music has been set on a sound footing,

and various other instances of the vigorous administration of Mr. Tower would be easy to quote. Most unfortunately ill-health has compelled him to resign his office as from the end of the summer term. It was from Sedbergh that he came to the South Downs school, and while in Sussex he has made a host of new friends, who will be the poorer for the removal of his breezy personality.

* * *

HIS successor, elected apparently without advertisement, is the Rev. H. T. Bowlby. He will bring with him something of the traditions of the Charterhouse of Haig Brown's days, and of Eton, where he has been an assistant-master for twenty-two years. At Oxford he was an exhibitioner of Balliol in the mastership of Jowett. He is also private chaplain to the Archbishop of York. Altogether a man of ripe experience.

* * *

THE Rev. Ll. W. Lloyd, who has been headmaster of Ashby-de-la-Zouch Grammar School since 1883, has been appointed to the vicarage of Tickenhall, Derbyshire.

* * *

OLD Alleynians will receive with regret the news of the death of the Rev. J. H. Mallinson, headmaster of the preparatory school, Dulwich College, since 1887. He was educated at St. Peter's School, York, and Christ's College, Cambridge. After leaving Cambridge he had four years' experience of teaching at Aysgarth School, in Yorkshire, one of the schools of the Society of Friends.

* * *

THE successor of Mr. Oscar Browning as principal of the Cambridge Day Training College is Mr. Walter Durnford. The son of a Bishop of Chichester, he was educated at Eton, and King's, Cambridge, of which college he was elected a fellow in 1869. From then until 1898 he was an asistant-master at Eton.

* * *

I HAVE already mentioned in these notes the fact that this year's president of the Educational Section of the British Association will be Dr. H. B. Gray, of Bradfield. The *Times* foreshadows the substance of his inaugural address, which will be entitled "The Educational Factors of Imperialism." This is just the kind of comprehensive subject we should expect to be the choice of Bradfield's Warden. Two remarkable movements, he will urge, have characterised recent years, one an educational, the other an imperial movement. These he will bring into relation by considering what reforms in education would best enhance and consolidate imperial sentiment. The first necessity is university reform, "which must dominate and precede reform in the curricula of secondary schools." But Dr. Gray looks to the new universities rather than to the old for light and leading. The study of the two dead languages must be relegated to a subordinate place, and scientific, English, mathematical, and modern linguistic subjects assert themselves. Manual training must be an integral part of the school course, and historical geography be recognised as an important subject. Cricket and football will largely have to give way to the claims of national service, and soldiering in school will become more and more a feature of the new school life. While avoiding a hide-bound, State-regulated system of education, we must destroy the curse of examinations. All this should be progressive enough for the most ardent reformers, and promises to make the address distinctly interesting reading.

* * *

ONE of the old style of schoolmasters has passed away in the person of the Rev. John A. L. Airey, who died at the rectory of St. Helen, Bishopsgate, on July 4th, at the age of eighty-six. He was educated at Christ's Hospital, being a contemporary of Sir Henry Maine, H. D. Harper, and William Haig Brown. In his days, Dr. Rice was headmaster, but the head mathematical master was the Rev. W. Webster, whose training was no doubt largely responsible for Airey's place as second Wrangler in 1846. The story goes that Airey not being well, Haig Brown hurried off to the Senate House to bring him news of the result of the Tripos, and was so absorbed in the fortunes of his friend that he quite forgot to inquire as to his own fate. From 1846 to 1850 Airey was mathematical master at Durham Grammar School. In the latter year he was appointed chief mathematical master at Merchant Taylors' School, being also chief of the modern side from 1875 to 1887, when he resigned. His two chiefs at Merchant Taylors' were Dr. Hessey and Dr. Baker. In recognition of his long service the Merchant Taylors' Company presented him to the rectory of St. Helen, Bishopsgate, with St. Martin Outwich. The *Times*, in its obituary notice, thus sums up his teaching work: "He was a somewhat stern teacher, but he never forfeited the respect of his pupils, many of whom gained great advantage from being under him." ONLOOKER.

THE THEORY AND PRACTICE OF EDUCATION.

THE appearance of a third edition of the late Dr. Laurie's "Institutes"[1] will be regarded with satisfaction by all who believe that the careful study of educational principles is one of the best guarantees of progress in the practice of the schoolroom. For there is no English writer (or should we say "writer in English"?) of our time who has done more than he to place that study upon a sound basis. Where others have simply gathered up the lessons of experience, or have laid down the law without much regard to experience, Dr. Laurie's position was always as far removed from armchair theorising as from

[1] "Institutes of Education, comprising an Introduction to Rational Psychology." By Prof. S. S. Laurie. 391 pp. Third Edition. (Oliver and Boyd.) 6*s.* 6*d.*

narrow empiricism. In this solid and at times somewhat difficult treatise he did not disdain to deal with the commonest incidents of teaching. But he always viewed them, so to speak, *sub specie aeternitatis*. He insisted that all theory of education must rest on a philosophy of man. "There is no escaping," said he, "this study of man. If it is too hard for the teaching profession, let them give it up. They can earn their living by teaching without it. 'Give him a threepenny bit and bid him go,' said Euclid to his slave, when an intrusive pupil asked the 'use' of mathematics. So we may say to those who ask the use of philosophy." It is in the spirit of this creed that Dr. Laurie wrote. And if he did not always hold you with his glittering eye, he somehow managed to hold you with a pretty tight grip—unless you happened to eschew philosophy.

Very different in style and execution from the work of the Scotch professor, though similar in its breadth of view and its philosophic tone, is the volume[1] which reaches us from the University of Rennes. The author of "Le Problème de l'Éducation" scarcely needed to tell us, as he does, that his book was spoken before it was written. No doubt it is this circumstance, along with the Frenchman's eye for clear arrangement and his ear for the right word, which helps to impart to M. Dugas's book its eminent readableness and its transparent lucidity. The keynote of the book is unambiguously struck in a passage in which the author defines his attitude, on the one hand, towards the history of educational thought, and on the other towards psychology. He tells us that, though he has made great use of the doctrines of the masters in order to illustrate and support his theses, it has been no part of his purpose to produce a work of erudition. As to psychology, he takes us into his confidence, and tells us that at first he thought of presenting pedagogic doctrines in their relation with that psychological science from which they seem to be derived, but that he has come to the conclusion that pedagogy should be independently developed, making its own psychology instead of receiving it from without. Thus he regards pedagogy, by which, of course, he means the science corresponding to the art of education, *less as an application of psychology than as a contribution to the study of psychology* (the italics are ours). Of a piece with this important pronouncement is his adaptation of M. Comte's use of the term *ingénieurs*, the class of persons who stand midway between the empiricists and the *savants*, and whose special business it is to organise the relations between theory and practice. Pedagogy, the sphere of the educational *ingénieur*, views the problems of education as a system of special psychological problems. Of the general soundness of this conception of the relations between science and art we feel sure. Of the implied supremacy of psychology as the "aid-science" of education we are not so sure.

[1] "Le Problème de l'Éducation: essai de solution par la critique des doctrines pédagogiques." By L. Dugas. 344 pp. (Paris: F. Alcan.) 5 fr.

Having made clear his aim and his method, M. Dugas proceeds to an examination in detail of the main "categories" of education, which he finds to be few in number. He adopts Rousseau's distinction between positive and negative education, understanding by the former the tendency to foist upon the child the knowledge and duties of the man, and by the latter the tendency to wait upon nature, to conceive of education as a process of aiding the spontaneous development of the child. Book I. is devoted to the latter type of doctrine, and the author's remarks upon "premature education," and upon the unintelligence and "psittacism" that result therefrom, are worth attention elsewhere than in France. Book II. is devoted to a consideration of the well-known categories of formal and material education; Montaigne, Port-Royal, and Mme. Necker de Saussure being taken as representatives in different ways of the first of these conceptions, and Rousseau and Herbert Spencer of the second. Here, as elsewhere, however, M. Dugas seeks not so much to expound the views of others as to emphasise and defend his own, by means of contrast and comparison. The subject of Book III. is "L'Éducation Attrayante," an expression for which a satisfactory English equivalent does not occur to us. But though we have not the name we have the thing, for in this part of the book the author examines the conflicting claims, familiar to us all, of interest and effort as guiding principles in education. Book IV. attacks the problem of the education of the will; whilst Book V. seeks to reconcile the divergent views discussed in the preceding books, and under the head "Integral Education," conceives the problem of education as essentially one, whose parts cannot be isolated without grave misunderstanding. Descartes and Comte are taken as representatives of this comprehensive view. All these topics are treated in a manner which marks the book as one to be reckoned with, wherever the study of education is seriously undertaken.

The dainty booklet[1] entitled "Quick and Dead" will appeal to a multitude of readers for whom formal and official pedagogy possesses few attractions. The writers, who do not fully reveal their identity, touch lightly, gracefully, but surely, and often in gently satirical fashion, upon that deepest of educational problems—the personality of the teacher. The two types—who does not know them?—here designated "Life" and "No-Life," are unerringly portrayed, and much of what the average masculine mind would stolidly systematise with the help of a grim psychological terminology is here made the subject of swift and delicate intuition, and is set forth with entirely admirable literary art. We cordially recommend the work to all young teachers.

Lord Curzon's memorandum[2] on Oxford Reform should appeal not only to those who call

[1] "Quick and Dead. To Teachers." By Two of Them. 71 pp. (Longmans.) 1s. 6d.

[2] "Principles and Methods of University Reform." By Lord Curzon of Kedleston. 220 pp. (Clarendon Press.) 2s. 6d. net.

Oxford *alma mater,* but to all who are interested in higher education, and duly estimate the immense influence upon the life of the nation which may be exerted by a great historic university. For the concise and business-like character of the memorandum all who are concerned will probably be grateful. Notwithstanding its brevity, it leaves no important question untouched, and no thorny problem shirked. The reform of the constitution of the university; the increase of facilities for the admission of poor men to its privileges; the administration of its endowments in respect of scholarships, exhibitions and fellowships; the abolition of compulsory Greek in Responsions; the institution of a general school-leaving or university entrance examination; the relations of the colleges to the university; the facilities afforded for advanced study and research; the "emancipation" of the theological faculty and degrees; the granting of academic degrees to women: all these and many other topics are discussed impartially, and made the subjects of more or less definite recommendations. So judicially has the work been done, and so sensitive has the distinguished Chancellor shown himself to the claims of the various interests involved, that few will be found to regret that the comparatively clumsy machinery of a Royal Commission has not once more been set in motion.

EDUCATION IN JAPAN.[1]

THE series of lectures delivered recently at London University by Baron Kikuchi, once Minister of Education for Japan, and now president of the Imperial University of Kyoto, has been published with certain useful additions. The volume deals with the whole subject of Japanese education, and gives full and interesting details of the administrative system, of methods of teaching different subjects, of the character and organisation of technical and other schools and colleges, and concludes with a charming description of education in the home.

Certain very distinct impressions are left on the mind of the reader after a perusal of this book. One cannot help being struck with the sympathy of the leaders of the nation for all forms of educational enterprise and experiment, and with the fact that all efforts seem to have been definitely planned as means towards well understood ends. That these efforts have failed in their purpose from time to time is but to be expected, even in the best laid schemes, but nothing appears to have been attempted haphazard, and mistakes once made have been speedily corrected.

Two facts must be borne in mind, as they provide the explanation of much that would otherwise seem unusual, especially in the case of a nation whose progress on Western lines is of such recent date. "From the first Emperor there has been an unbroken line of descent to the ruler who now occupies the throne." The Japanese people regard themselves as all descended from the Imperial family, or from those who came over with them in the prehistoric days when they migrated from the Plain-of-High-Heaven to their present abode. Take these two facts together and we see that the nation is merely one big family, with the Emperor as patriarch. This relation between the Imperial House and the people is the basis of the educational system. Hence, from a very remote epoch, the betterment of the political, social, and moral condition of the national family has been foremost in the minds of all its members. So far back as 701 A.D., a university was established in the capital, and a school in each province, and elaborate rules were drawn up for administration and examinations. Naturally, there have been many changes during the succeeding twelve centuries, but certain fundamentals have always been insisted upon, not the least important of which is the necessity for the teaching of morals, and the absence of all definite religious education. "Reverence for ancestors, for ancient gods and for Buddhist gods was inculcated in just the same way as the veneration for Confucius and other great philosophers, and for the good, the wise, and great men in general."

With 1868 began the era of "Enlightened Government." A Cabinet was formed, presided over by a Minister President. There were nine departments of State, with a Minister at the head of each. The most important of these was the department of Foreign Affairs. Education came seventh in order of official importance, taking rank before either agriculture or commerce. The organisers of the first of the new systems of education borrowed their ideas largely from other lands. They drew up a scheme with very considerable detail, and then tried to apply it to their own land, but modified it from time to time, as they found it unsuitable.

At the present time the whole of the educational affairs of the Empire are under the Education Department, which contains three bureaus, viz., the Bureaus of Special Education, of Common Education, and of Technical Education. Attached to the department is the Higher Educational Council, which contains representatives of every class of school, college, university, or other educational institution (including libraries, museums, &c.). All the more important matters coming under the cognisance of the department have to be submitted to this council. The council is a purely advisory body, but its decisions, though not binding, are almost invariably respected. In all this there is no question of party politics. The best thought on educational matters is first sought and then followed, the sole idea underlying every step of the procedure being simply the benefit of the great family.

The first Education Code was issued in 1872. The principle that underlies it is that education is to be universal; its advantages are not to be monopolised by any one class; everybody is to receive elementary education at least, and without distinction of class, occupation, or sex, and as for higher education, equal opportunity is to

[1] "Japanese Education." By Baron Kikuchi. xvi+397 p. (Murray.) 5s. net.

be given to all according to their capacity. The spirit of this new system was essentially utilitarian, and little emphasis was laid on moral education or culture, not because moral teaching was considered unimportant, but because there was no distinct line drawn between moral training and intellectual teaching, the two being combined; it was only later that the necessity for distinct moral teaching under altered conditions of things came to be perceived clearly. Baron Kikuchi gives full information as to the result of this first experiment, and points out that its failure was due to the fact that it was too ambitious. Subsequently the Code was revised and new regulations were issued. This process of amendment is a fairly simple proceeding, as the educational system of Japan is not determined by laws requiring Parliamentary sanction, but by Imperial Ordinances, issued by the Emperor, after consultation with the various bodies responsible for advice and administration.

At the bottom of the system is the elementary school, with two courses, (*a*) ordinary and (*b*) higher. The ordinary course extends over six years, and is compulsory for all children who have completed their sixth year. The higher course extends over two or three years. In these schools boys and girls are usually taught in the same schools, and often in the same classes, but beyond this the education of boys and girls is distinctly differentiated. The Japanese have pronounced against co-education.

From the elementary school a boy may enter a middle school, where the course extends over five years, and where he completes his general education usually before he is eighteen. If he intends to go to the university he next enters a higher school, where there are preparatory courses extending over three years. The final stage is the Imperial University, with an undergraduate course of three or four years, and a post-graduate course.

Instead of going on to the university, a boy may, after he has been through a middle school, enter a special college, a technical college, or the higher normal school. It is all perfectly clear and reasonable. You start at a given common point, and know precisely what direction to take at a later date, according to your wishes, your capabilities, or your means. The education for girls runs on somewhat parallel lines.

Inspection is not thorough. The number of inspectors was raised, in 1908, from five to eleven, surely a very small number to deal with so extensive a system. Inspection in Japan has always been unpopular.

The teaching of morals is based on an Imperial Rescript issued in 1890, copies of which are sent to every school in the Empire; those given to governmental schools are actually signed by the Emperor. "The two cardinal virtues upon which emphasis is laid are loyalty to the Emperor, with which is identified patriotism to the country and filial piety. To foster this, photographic portraits of the Emperor and the Empress are distributed from the Imperial Household to every . . . school; these and the copy of the Rescript must be kept in a special place and carefully guarded. On public occasions they are brought out and hung up in the room where the function takes place, and the same respect is paid to them as if their Majesties were present in person. There have been several instances where . . . a teacher has saved them at the risk of his life from flames, when the school building was burnt down by fire." Baron Kikuchi gives much curious and interesting detail as to the holidays on which this ceremony is observed, and of the method in which it is performed. Schools that celebrate Empire Day in this country might get a few useful hints.

In most schools above the elementary grade, male pupils wear uniforms, so that they can be distinguished easily. Teachers also in certain cases wear a distinctive dress.

No corporal punishment can be imposed in any school, and *it has never been found necessary.* "Imposition of a task, merely as a punishment, is unknown; although an idle or backward pupil may be given a certain task to make up for his backwardness, that would not be meant as a punishment."

Conferences with parents are common. Views are exchanged, and the work of the pupils is exhibited. The mothers, in particular, flock to these conferences, and the director of one of the elementary schools in Tokyo says that not only do they listen to what he has to say, but they also follow his advice.

School journeys are almost universal, and in the case of boys from middle schools, these often extend over five days. In the summer holiday special summer stations are established at the seaside, and lessons in swimming are given.

There are defects, which Baron Kikuchi neither hides nor defends, though he attempts to account for them. Classes in elementary schools are too large; the teachers are underpaid; there is little practical work in science. For these deficiencies the financial condition of the country and the people is held responsible.

It would be interesting, and sometimes amusing, to quote from the departmental circulars issued in regard to the teaching of various subjects, but space forbids. We cannot, however, resist the temptation in one case, to be found in the instructions for teaching physics and chemistry. "Experiments to be shown before the class should be carefully prepared and tried beforehand, so that there might be no failure during the lesson."

One of the most interesting chapters deals with the position of women. The aim of the Japanese in the education of their girls is to make them good wives and wise mothers. There is no hint of the advanced woman epidemic in these pages.

The price of the book, five shillings, places it within the reach of everybody. We should like to enforce its perusal on all legislators, and recommend it to all teachers.

JEBB'S "THEOPHRASTUS."

JEBB'S "Theophrastus" has been long out of print, and selling at a large price. The book was valued not only for its own merits, but because there was no other useful edition of the author, until, in 1904, Messrs. Blackie published one for schools. It is probable that Jebb himself was deterred from revising his book, because he felt more and more the difficulties of the task as he grew riper in scholarship. But he would probably have revised it, if he had lived, as Dr. Sandys tells us.

Dr. Sandys has made few changes. The discussion of date has been modified. In 1897 an edition was brought out containing an essay on the date by Cichorius, placing it in 319, not 316. This essay was read by Jebb, who wrote notes of it in his own hand, and 319 is therefore in this edition assumed to be the year of composition. A few references to later books have also been added. In the text, one or two changes have been made, corrections in spelling, and restorations to bring the text and notes into harmony. A few trifling corrections have been made in the translation. The notes have been put at the foot of the page. Two items have been omitted from the notes; and the new edition has added a number of others, referring to recent work on the Characters, and quoting from texts discovered since 1870. Bibliography and critical notes have been brought up to date. The last head is that under which the most important additions have been made. The more probable suggestions of later critics have been quoted, and the disputed readings of the Paris and Vatican MSS. have been checked by Prof. Diels's researches. These MSS. had been photographed for Diels's forthcoming edition of the text, and his proof-sheets have been at the service of Dr. Sandys. A Greek Index Verborum has also been added, which vastly increases the value of the edition.

Dr. Sandys's additions to the commentary are often interesting. He has found a parallel on an Attic vase for the jackdaw armed with a shield (*Μικροφιλ.* p. 67); nor is this the only reference to art representations in the new notes. Perhaps the epitaph of the dog in the same character was intended to suggest the demotic *Μελιτεύς*. There are some judicious remarks also on the wife's epitaph (p. 78). The note on military commands (*ὀψιμ.* p. 70) might have referred to the passage in Arrian *Τέχνη Τακτική*, 32. Good illustrative matter is added to many words: *e.g.*, *ἀποψῶν* (p. 132), *μεσοπορεῖ* (p. 137), *κατὰ κεφαλῆς λούσασθαι* (p. 147); and a number of historical notes elucidate the circumstances of the time.

Jebb's edition is remarkable for its literary interest. Not only does the translation give pleasure to the English reader, but the introduction examines with critical insight the relations of Theophrastus to his English imitators. Healey's old translation (1616) was not known to Jebb; it has since been reprinted, and would have formed a welcome appendix to the present work.

[1] "The Characters of Theophrastus." An English Translation from a revised text, with Introduction and Notes by R. C. Jebb. A new edition, edited by Dr. J. E. Sandys. xvi+230 pp. (Macmillan.) 7*s.* 6*d.* net.

THE LAW AND SECONDARY SCHOOLS.[1]

WE welcome with much pleasure a book dealing with the law as it affects secondary and preparatory schools. Such a book has for some time past been required, and with the multiplication of secondary schools, more particularly those under the control of county and borough councils, the need has become greater.

Amidst some defects the work under consideration has excellent features. The arrangement is good; the matter is so tabulated as to be readily understood by others than those learned in the law; the headings and sub-headings are well chosen, and an excellent index is provided. After dealing with the establishment of a secondary school, the author proceeds to detail the statutory enactments affecting such schools, and the limitations placed upon them by the laws of Mortmain and Charitable Uses.

There are one or two statements in the introduction and second chapter which are open to criticism. The author states: (1) "Nearly all secondary day-schools are, in consequence, either endowed or State-aided"; and (2) "The majority of secondary schools still consist, however, of endowed schools." Probably neither of these statements is correct; although the number of private secondary schools is decreasing, they do, especially in the case of girls' schools, far outnumber both the endowed and the State-aided; and, again, the number of schools provided by local education authorities, together with the private secondary schools, far outnumbers the endowed. The chapter upon the powers and duties of local education authorities does not demonstrate to the reader sufficiently the immensity and importance of their powers and duties.

No mention is made of the fact that under the newer schemes of the Board of Education the property of old school foundations is being handed over to the county councils, who are made responsible for the maintenance and management of the school and its foundation, having power to delegate such of its powers as it may deem desirable to either its education committee or a governing body to be appointed by the county council.

It is a pity, too, that in the appendix, which gives in detail the Charitable Trusts Acts, the Endowed Schools Acts, the Board of Education Act and the Orders in Council thereunder, the Education Acts, and the Regulations for Secondary Schools, no mention is made of the model scheme issued by the Board for the government of secondary schools created by a county or borough education authority.

The chapter dealing with trustees and governors, their powers and duties, is admirably

[1] "The Law concerning Secondary and Preparatory Schools." By A. H. H. Maclean. 470 pp. (Jordan.) 15*s.*

written, as also is that relating to the management and disposition of school property. In the section "Taxation affecting Schools," a somewhat inadequate portion is devoted to the question of the liability of school property for poor and general rates, and of the basis upon which it should be assessed. The appointment of assistant-masters is dealt with very shortly, possibly due to the fact that almost every recent scheme of the Board for endowed schools has varied in this matter from its predecessor. An interesting chapter discusses the thorny question of religion in schools. Although the book is presumed to deal with preparatory schools, little reference is made to them.

THE TEACHING OF MUSIC.[1]

THE Scotch Education Department has just issued the seventh of a series of memoranda on the teaching of various school subjects. The latest is an admirable one on the teaching of music. The former methods of teaching this subject were too crude, too unscientific, and too little calculated to advance this, the youngest but the most potent of all the arts. In past years, particularly in secondary schools, the subject has been treated too much from the recreative point of view. Now we are urged, and rightly so, to subordinate this side of the teaching and to make a greater demand upon the intellect of the pupil. The memorandum claims that, if proper methods are followed, the study of music, besides being a means of recreation, will improve the health, sharpen the mental faculties—particularly those of speech and hearing—and have no small influence in deepening and ennobling the emotions, and indirectly, therefore, the character. The aims set out in the introduction are undoubtedly high, but there is encouragement in the statement that "few, if any, specific recommendations are made which are not supported by the actual experience of teachers of repute."

The memorandum attaches great importance to *vocal* music in schools, and insists upon good voice production and careful ear training. In voice training the teacher is advised strongly to have due regard to the delicacy of children's voices and to "hesitate to adopt the trainers of choir-boys as a model; their methods are too largely prompted by their needs." The mean compass suggested might, however, with advantage be extended slightly except in the case of young children.

The hints on proper breathing are most useful, and to produce correct breathing there should be sympathetic co-operation between the teacher of music and the teacher of physical exercises. Excellent rules are given for the right pose of the body, and the following hint is suggestive: "Unless the posture of the body is natural and graceful and the expression of the face unconstrained and bright, it may be taken as a sure sign that there is something wrong." The memorandum wisely refrains from advocating any elaborate system of voice production, and recommends as a remedy for most of the evils of class-singing that which all teachers have found to be of immense practical value, viz., soft singing. If children sing softly they will sing naturally, and if quality is aimed at power will come with practice.

All teachers of music will sympathise with the emphasis laid upon the necessity for careful ear training, but we are somewhat dubious of the amount of success that will attend the study of pitch relation "treated harmonically or in simultaneous combination." It is undoubtedly an admirable thing to aim at; but, except under the most skilful teachers and with children endowed with very keen musical perception, very little that is profitable will be achieved in schools. Instead, more stress might have been laid upon the desirability of good sight-reading. Children ought, with intelligent training from early years, to be able to look at a simple melody written in old notation and mentally to read and appreciate it before singing it or fingering it out on the piano.

In the section dealing with what and how children should sing, there is a timely warning as to the limitations of folk-songs. This is particularly applicable to Welsh and Scottish songs, in which the range demanded often produces an undue amount of straining and consequent injury to the voice.

The following extracts, though interesting, give but an inadequate idea of the value of the memorandum; the whole of it should be read.

> For school children, vocal music is the only form of musical study that is possible within school hours.
>
> It follows . . . that vocal teaching in schools must be class teaching. It does not follow that class teaching is the best possible method of giving instruction in singing. . . . The chief dangers arise from disregard of the delicacy of children's voices, and from failure to take account of the difference in their compass and the variation in their registers. A strain of any kind, be it caused by shouting, by exceeding an easy compass, or by forcing the registers, may do more than ruin the voice as a child-voice; it may destroy all hope of its developing into a good adult-voice.
>
> Pitch and Compass.—The voices of children differ greatly among themselves both in pitch and in compass. . . . It will at once be evident that the simultaneous training of a set of differently pitched and differently compassed voices constitutes an exceedingly severe problem. The high or the low notes that are reached with ease by one little singer are to another impossible, or not possible without a dangerous strain. What is to be done? Only one solution is practicable: limitation to a mean pitch and a moderate compass, a pitch and a compass within the capacity of all.
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> But what should the mean compass be? It will be safe to fix it at  . This compass, of course, is exceeded by many teachers—by the trainers of choir-boys always, and by the trainers of school classes usually,

[1] "Memorandum on the Teaching of Music in Scottish Primary Schools." (Wyman.) 2*d*.

although not to the same extent. Thus we find it stated that a range of a twelfth is a safe compass, but with the precautionary hint that the higher notes *f* and *g* will not be sung well by the great majority of children until they have had some training.

VOICE PRODUCTION.—Voice production embraces two disciplines: the art of breathing and the art of equalising the voice.

Without proper breathing it is impossible to secure either a good quality of tone or a good performance of a vocal composition. And by proper breathing is to be understood simply natural breathing under the full control of the singer. . . . A combination of midriff (diaphragmatic or abdominal) and rib (costal) breathing is the best; collar-bone (clavicular) breathing should be avoided. The former, by lowering the midriff and raising the ribs, enables the lungs to expand freely and to take in a large quantity of air.

In the case of class teaching, where but little individual attention can be given, it must be frankly acknowledged that the teaching of voice production in the fullest sense of the word is impossible; there the teacher must mainly keep before him the necessity of avoiding all that is either physically harmful or æsthetically unpleasing. As an experienced teacher of children has well said, "Voice training cannot be attempted, but voice destruction may be prevented." In short, voice training, such as adult singers ought to get, is not only impracticable in classes, but is actually dangerous where children are concerned.

The following recommendations may safely be formulated, as being likely to lead not only to negative but also to positive results. . . . (i) Soft singing is a remedy for many evils. It prevents the destruction of the voice, so often brought about by shouting; it secures beauty of tone; and it makes for the equalisation of the registers.

(ii) The attainment of the last of these three objects is further facilitated by practising scales softly, proceeding from easily sung high notes downwards. Thus the coarser chest notes may be gradually improved by approaching them from the sweet head notes. What has been said above as to the sweetening of the chest notes and the strengthening of the head notes should not be forgotten.

EAR TRAINING.—Of all branches of musical study ear training is the most important and the most indispensable. . . . And the fact should not be overlooked that the process is by no means a purely physical one. On the contrary, ear training implies mind training, the mind being, indeed, the predominant factor in the process.

What the pupil has to acquire is ability to distinguish the differences of pitch and time; he must learn how to recognise them, and to reproduce them with voice and with pen on hearing them sung or played and on seeing them written down.

The study of pitch relation has to do with intervals and with tonality. By tonality is meant the relationship of the degrees of a scale to each other, more especially to the tonic (first degree), and the tonic triad (first, third, and fifth degrees), each degree having a character of its own. . . . For the inculcation of tonality no better method can be found than the tonic sol-fa system. But it must be understood that this system should be used as an elementary introduction only, and that the pupil should early be made acquainted with the old (stave or staff) notation. In employing the tonic sol-fa the teacher requires to exercise great care lest the pupils become slaves to the syllabus, and the method deteriorate into a mere system of mnemonics.

Pitch relation has to be studied harmonically or in simultaneous combination, as well as melodically or in successive combination. The character of an interval impresses itself more strongly when the notes concerned are heard simultaneously than when they are heard successively. There being no serious difficulty involved, this side of the subject should be attacked early. The best and simplest plan is to divide the class into halves. Let the whole class begin by singing one note; then, while one half of the class continues to sustain this note, let the other half of the class add to it another note. Afterwards the two halves of the class should exchange the parts, the half which previously sustained the original note now singing the added note. Further, when the exercise has been done, beginning with a lower note and adding a higher one, the reverse way should be tried, the upper note being sustained and the lower added. At a later stage combinations of three and four notes should be practised. At first only the simplest combinations should be attempted—the three principal consonant triads, that is, those of the tonic, dominant, and sub-dominant. Then these might be sung in this succession to show the connection between them—tonic (*c.e.g.*), dominant (*b,d,g*), and tonic (*c,e,g*); and tonic (*c,e,g*), sub-dominant (*c,f,a*), and tonic (*c.e.g.*). After this there might be introduced the easiest and most important dissonant combination—the chord of the dominant seventh. This will strengthen the tonal sense, or feeling for tonality, inasmuch as harmonic combinations bring out the tonal tendencies more distinctly than melodic progression.

WHAT AND HOW SHOULD CHILDREN SING?—Children should sing the best that is within their physical and intellectual reach, the most beautiful, and at the same time the most wholesome, songs. It is an essential condition that the music should be simple—simple in melody, harmony, and rhythm; there must be no difficult intervals, no out-of-the-way modulations, and no awkward capricious rhythms. It is not enough, however, that the music should be simple; it must also be free from all taint of vulgarity. And it must be joined to words that are appropriate to the stage of intellectual development that the young singers have attained.

Almost everyone will admit that folk-songs provide the proper musical food for children. But the limiting condition is too often overlooked; they do so only in so far as they are simple and well adapted to the physical and intellectual capacity of youthful singers. If this condition be observed, it will be found that the selection is by no means easy. To begin with, an embargo must be placed upon many love songs, upon most drinking songs, and upon all songs that reek of savagery, even if the savagery masquerade as patriotism; the songs to be favoured are those that sing of noble deeds and gentle sentiments, of nature as manifested in fields and woods, valleys and mountains, seas and rivers, plants and animals, storm and sunshine, of men's work and play, their joys and sorrows, their hopes and fears. Again, as was indicated above, it will be necessary to reject songs that demand too extended a compass, or that involve awkward intervals and eccentric rhythms.

Nor should a strict line be drawn at folk-music. It would surely be foolish not to avail oneself of the rich stores of noble and beautiful thoughts produced by the most gifted and cultured musicians—to ignore the works of the great masters. Here, too, however, the choice must be carefully limited to what is adapted to the physical and mental capacity of the children, and the limitation is, of course, an immensely greater one than it was in the case of folk-music.

Is the singing to be entirely unison-singing, or may it also be to some extent part-singing? It should be frankly recognised that many of the part-songs now sung in schools are hurtful, and ought to be discarded. But part-songs can be written in such a way that an easy compass is preserved. Indeed, they may be so written that it is possible for the singers to exchange the parts, those who have sung the first part subsequently singing the second part, and *vice versa*; and it is advisable that every pupil should learn to sing the lower part as well as the higher. There is no reason why songs with even three parts should not be made use of, although with a small compass the difficulty of finding a suitable supply becomes greater. In three-part singing it is again advisable that a system of exchange between the singers should be practised, so that each may be accustomed to sing the highest, the middle, and the lowest part.

Lastly, it is of the greatest importance that the teacher should direct the attention of his pupils to the beauty of the melodic lines, to the character of the rhythm, and to the nature of the expression. Expression, in particular, should be most carefully observed; if pupils fully realise the spirit of the words, they will sing spiritedly, will enjoy the music far more than they would otherwise do, and will profit by it to an infinitely greater extent both morally and recreatively.

TRAINING-COLLEGE SCHOOLS.[1]

MANY problems relating to the training of teachers are still unsolved, and amongst them none is more urgent than that of the schools in which students shall learn the principles and practice of their profession. Principles have in recent years been too much a matter of the lecture-room. Training colleges have inspired their students with lofty, but vague and unsubstantial ideas about their work, which rapidly disappear when faced continuously with the somewhat cold realities of the class-room. This general tendency to theorise represents a revolt from the time when "methods" were invented and students were sent to learn them at their source. The solvent action of criticism has led us to give up the idea of a rigid procedure to be learnt by imitation, and we have substituted courses of lectures on the psychological principles of education without at the same time bringing the organisation of the training-college schools into conformity with the new conditions. In the old days the college grew up round the school; now we set up training colleges and afterwards look out for schools!

The Glasgow committee has just issued a report dealing with the subject in a sufficiently radical way. Its conclusions are based partly upon an inquiry into the working of certain schools already serving training-college purposes —the Horace Mann and the Speyer Schools in New York, the Fielden Schools in Manchester— and partly upon certain ideals which have never yet been realised completely. We are already familiar with the functional difference between a practising school and a demonstration school. The experimental school as a separate institution is, on the other hand, a new-comer; that is to say, no public body has so far accepted the idea in principle. The claim put forward on its behalf is sure to call forth criticism. Can it be sustained in spite of that?

There is, of course, no question amongst teachers of the need for scientific research in regard to many of their problems, and they will welcome any report which may serve to popularise the idea. But some will doubt the wisdom of setting up specific experimental schools. It is hardly sufficient defence to quote Prof. Dewey's dictum to the effect that experiment is not *on* but *for* the children. So long as the interest of the staff is primarily in experiment, parents will decline to sacrifice the time of their own children to the general good which experiment is designed to serve—in the nature of the case, some experiments must fail.

It is true, of course, that every schoolmaster should be ready to make experiments, and that if he is worth his salt he is already doing so. It follows, then, that the demonstration school in particular should be a centre of experiment—more carefully devised, watched, and carried through than would be possible elsewhere—and at the same time it should typify the connection between the duty of meeting the obligations which the school owes to the parents of the children and the duty of conducting original investigation. "Infirmaries joined on for experimental work to medical schools" are *not* experimental hospitals. They are primarily a demonstration ground of the best medical and surgical practice. They are first of all hospitals with social duties and responsibilities, or they would soon cease to exist. The appeal to the hospital analogy seems destructive of the argument which is set up in favour of the separate institution of experimental schools.

The general conclusions of the committee are summarised below.

Conclusions.

After careful consideration of the whole question, and in the light of the investigations it has made, the committee has come to the conclusion that three types of school are necessary in connection with the combined interests of the training of teachers and the study of education. These are: (i) practising schools; (ii) demonstration schools; (iii) experimental schools.

Practising Schools.—These would be the best of the ordinary public schools, to which students would be admitted for practice under supervision. This entails no change in present practice, but it might be possible to systematise this part of the training to a greater extent than at present. The great disadvantage of the ordinary school as the practice ground for the young teacher is that it offers no adequate guarantee of correlation between theory and practice. Though much can be done in this direction by conferences between the method staff and the masters of the practising schools, there is always bound to be a certain degree of loose articulation between the two. Hence the need for demonstration schools.

Demonstration Schools.—These should be under the direct control of the training-college authorities. They

[1] "Glasgow Provincial Committee for the Training of Teachers. Report on Training College Schools. Their Place and Function in a Training Centre for Teachers." By D. MacGillivray and D. M. Wilson.

should be subject to the Code Regulations of the Education Department, and to inspection by its officers, just as the other schools; but in regard to schemes of work, time-table, and methods, they should have the fullest liberty. One of their main functions, indeed, would be to illustrate new methods for which the ordinary schools are not yet ready. The lecturers on education and the masters of method should take an active part in directing and supervising the work of the schools. The schemes of work, the time-table, and the methods in use should be determined by them in conference with the headmasters and responsible teachers of the schools. This would secure, as nothing else could, the necessary correlation between lecture-room theory and school practice. Such demonstration schools, staffed with specially selected teachers and equipped with all necessary apparatus, should also serve as model schools where the governing principles, the methods, and the results would represent all that was best in the educational practice of the day.

Finally, as Prof. Findlay has pointed out, "these demonstration schools would furnish a workshop for lecturers and students with an intimacy and thoroughness that cannot be allowed in the ordinary schools." "To convince young teachers of the results of approved methods, facilities for observing or for demonstrating these at any stage in the development of a subject are essential, and such facilities can only be got in a school entirely under the control of the committee."[1]

EXPERIMENTAL SCHOOLS.—There is a growing agreement among educational experts that an experimental school is an indispensable institution in any complete organisation for the training of teachers. In the demonstration school the future teacher has the opportunity of seeing the best accepted methods being carried out in a more complete and systematic form than he can see them in any but the most exceptional schools, and it is very important that he should have such models for imitation. But one who has only learned to imitate, even when the methods he imitates are the accepted best, is imperfectly trained for the work of the teacher. The experimental school, properly conducted, is calculated to give that openness of mind to new views, and the power of adaptation to changing conditions, which is the necessary complement of the training got in the demonstration school.

It is a further advantage that the work of such a school would give the lecturers and the masters of method, who are responsible for the training of teachers, the necessary opportunities for the practical study of educational problems. No university or college teachers can afford to become mere teachers and neglect personal research in the subjects they profess, least of all the teachers of teachers. With an experimental school, in the working of which they had some personal part, this danger would largely disappear, and it would cease to be a reproach to our educational theorists that they alone among specialists contribute little or nothing to the advance of their own science. Further, as an important incident of the work, there might result from the original research of the teaching staff experience that would be of very great service in solving the more pressing of our educational problems. Educational thought and practice have been in a state of continual change during the last decade or two, and the end is not yet. It is not too much to say that, if there had been one or two experimental schools in Scotland during the last ten or fifteen years, a considerable waste of energy and of public money might have been avoided, and the general progress of Scottish education would have been both steadier and surer. As things have been, the experimental work has been done at the expense of the ordinary schools, ill-fitted as they are in many ways for such experiment. Proper experimental schools of the kind suggested, with special facilities for testing new methods, would certainly have saved the ordinary schools from the necessity of this wasteful experiment.

Accepting the principle that the experimental work of the school should be in more or less obvious relation to the work going on in the ordinary school, two main lines of inquiry might be followed.

I.—PROBLEMS RELATING TO SCHOOL ADMINISTRATION, CURRICULUM, AND ORGANISATION.

Such as:

(*a*) Principles of classification (the value of age as a basis of classification: the best methods of grouping pupils for instruction in the different subjects, &c.).

(*b*) The facts about fatigue effects both in pupils and teachers (work of the greatest importance not hitherto done for Scotland at all, and imperfectly done anywhere: a fundamental inquiry in school hygiene).

(*c*) Arising out of the fatigue inquiries, inquiries as to the best arrangement of the school day with respect to (i) the order of subjects; (ii) length of lesson periods and of intervals; (iii) the best employments for forenoon and afternoon sessions. In all these matters concurrent experiments would need to be made in the ordinary schools.

(*d*) The educational value of the various subjects in the ordinary curriculum. It might be possible to arrive at a standard of values that would be of material service in determining the *necessary* subjects in a school curriculum.

II.—PROBLEMS RELATING TO THE METHODS OF TEACHING THE DIFFERENT SUBJECTS.

It is scarcely possible to do more than suggest the general character of an experimental school of the kind needed for our purposes in Glasgow. One or two points may, however, be noted.

(*a*) While there is no reason why such a school should not include pupils from the kindergarten stage up to the end of a full secondary-school course, it would probably be found sufficient for all practical purposes to limit it to the elementary-school stages. If the pupils at the age of twelve or thirteen were expected to be presented for the qualifying examination—a requirement in no way incompatible with perfect liberty in organisation at all preceding stages—there would be ample guarantee both to parents and to the public that the children were not suffering in any way by the departure from the accepted course that experimental work might entail.

(*b*) The classes should be small—certainly not more than twenty-five or thirty pupils in one class.

(*c*) For some purposes it might be well to have two classes in each school year at much the same level of advancement. Comparisons and control experiments are most easily made between two sets approximately equal in general standing. If this were done the total number of pupils in the school would be about 400—two groups of twenty-five in each of the eight years from five to thirteen.

[1] Report for 1907-8 by Mr. McCallum, Master of Method.

A Spanish Primer. By A. C. Clapin. 56 pp. (Bell.) 1s.—The principal elements of Spanish grammar are dealt with in about thirty pages, twelve of which are devoted to the verb. The information given is clear, though not always accurate. Beginners who use the book will have to unlearn, among other things, *stolto*, *pajá*, *calquiera*, *qual*, *plugó*, *dija*, *relucer*, *relampaguer prometti*, *queiro*, &c.

THE HEALTH OF SCHOOL TEACHERS.[1]

By R. T. Williamson, M.D., F.R.C.P.

The teaching profession is, on the whole, a healthy one; the mortality is low: it is lower than that of other professions except the clerical. In England and Wales the mortality of school teachers is very much below the average for all occupied and retired males. But in these statistics the occupation group "schoolmasters and teachers" includes lecturers, professors and teachers in colleges, in addition to teachers in elementary schools. The statistics relating to the last-mentioned class would probably not be so favourable; and there can be no doubt that school teachers very frequently suffer from preventable illness and diseases, which are produced, directly or indirectly, by their professional work. The death-rate amongst schoolmasters and teachers from two causes—diabetes and suicide—is above the average of all occupied and retired males in England and Wales; but from both of these causes the mortality is below that of the medical and legal professions, and below that in many other occupations.

The reports of the Registrar-General show that in England and Wales the following are the chief causes of death amongst school teachers: phthisis, diseases of the circulatory system, and of the nervous system. Phthisis (consumption) is the most common cause of death. The mortality from phthisis amongst schoolmasters and teachers is higher than amongst medical men, clergymen, barristers, and solicitors, but less than amongst law clerks, and less than that of the occupied and retired male population generally.

Statistics published by W. Todds, based on the returns of the Teachers' Provident Society, show that, during the year 1906, influenza was the ailment for which claims were most frequently made. The next most common ailments were throat affections; chest diseases (phthisis, bronchitis, &c.) ranked third. The death-rate from influenza amongst teachers is, however, below the average for all occupied and retired males in the returns of the Registrar-General.

The Government returns of diseases, for which "break-down" allowances were granted (under the Superannuation Act), show that the most frequent ailments were nervous diseases—chiefly neurasthenia.

Of the ailments for which the writer was consulted, in his practice as a physician, by school teachers, the following were the most frequent of those which were, directly or indirectly, caused or increased by their professional work: neurasthenia and various neuroses, migraine, headache, Graves's disease, diabetes mellitus, throat affections (loss of voice, laryngitis), phthisis, and dyspepsia.

The health of the teacher is liable to be impaired (*a*) at an early period of his or her career through the course of training at college, and (*b*) afterwards through school teaching and work under unsatisfactory conditions.

(i) At the *training college* the student's health may be impaired by excessive study, and this risk is greater at those colleges at which the students work for a university degree in arts or science in addition to the ordinary teacher's certificate. It would be better, from the point of view of hygiene, if the degree were taken first, and the work for the teacher's certificate separately, in a course of one year's study after the degree had been obtained.

Students who suffer in health are chiefly those who are very ambitious, and work specially hard for some prize or scholarship, those who have to do other work in the evenings, those who work absurdly long hours and take little exercise, those who arrange their work badly and devote a large proportion of their time to one subject, and those who do not work regularly, but leave their reading to a period just before the examination. Occasionally there is overstrain, because the student's mental abilities are much below the average. It is the women students who are most liable to suffer in health, because they have a less physical resisting power, and they have more frequently other work to do in the evenings (house-work and domestic duties in the case of students who reside at home).

The students who take up many new subjects in the college curriculum are, of course, more liable to suffer from overstrain, and especially those who commence a new language. If Latin or Greek has not been studied before the student enters the training college, it is liable to cause much mental strain in certain individuals when it is commenced as a new subject during the busy college curriculum.

The various causes of impaired health during the college training of the teachers are considered in the original paper.

(ii) After the period of college training is over, *when the teacher commences work at school*, there are many causes of impairment of health. A common one is mental overstrain through the very long time devoted daily to teaching. In addition to the school work, often there is great mental strain caused by the correction of a large number of the written lessons of the pupils, which has to be done after school hours are over, in the evening, in the interval between morning and afternoon school, or in the play-time. Evening classes and private tuition, in addition to the daily school work, are causes of great strain. But many teachers in poor circumstances have to take this extra work. Private study in the evening for higher examinations, &c., is another great strain.

During school hours there is often much mental strain when the classes are large. The necessity for speaking very loudly in noisy schoolrooms causes great strain of the voice. The bad ventilation of schoolrooms predisposes to phthisis and tubercular diseases. Many teachers increase the risk of tubercular disease by not taking sufficient open-air exercise. If the interval between morning and afternoon school should be very short, the mid-day meal is liable to be hurried, and dyspepsia often occurs.

(iii) The *diseases specially associated with the work of school teachers* are considered separately.

Nervous affections (neurasthenia, neuroses) are the most common causes of impaired health. The prolonged hours of work, the great fatigue caused by large classes, the extra strain of evening classes and private tuition, the correction of a very large number of scholars' written exercises, all contribute to the production of neurasthenia.

Headache is a troublesome affection, from which many teachers (especially women) suffer frequently. Its varied causes are described: neurasthenia, mental overstrain, migraine, bad ventilation of the schoolroom, dyspepsia, defects of vision due to errors of refraction of the eye (myopia, hypermetropia, and astigmatism), &c.

Graves's disease, in its mild forms, is probably a little more common amongst teachers than in other individuals.

Diabetes Mellitus.—The death-rate from this disease amongst school teachers is above the average of all occupied and retired males in England and Wales. Great mental strain connected with teaching (especially through private tuition and night classes) has often been an important factor in predisposing to the disease, or in actually causing it.

Throat Affections.—Very frequently teachers persistently

[1] An abstract of an article published in the *Medical Chronicle* (Manchester), February, 1909.

overstrain the voice in school work. Consequently, they often suffer, especially women teachers, from affections of the throat (larynx and pharynx). In the statistics of the Teachers' Provident Society throat affections rank second as a cause of absence from school duties.

The throat affections of school teachers are caused chiefly through speaking too loudly, speaking too much, and speaking too rapidly. A very important factor in the production of these throat affections is the necessity for speaking very loudly owing to two or more oral classes being conducted in the same room. Another cause is the necessity for speaking very loudly owing to the class-room being adjacent to a noisy street. If the room is badly ventilated, and the window has to be kept always open, more or less, for ventilation, this makes the room still more noisy, and the teacher must speak louder. If the window should be closed the noise is less, but the atmosphere soon becomes very bad. It must also be admitted that teachers often acquire the habit of speaking very loudly when there is no necessity.

Tuberculosis.—Statistics show that tubercular disease, in its various forms, is the most common cause of death amongst school teachers. Bad ventilation of the school-rooms, very large classes, dusty schoolrooms, overwork, insufficient exercise in the open air, are all predisposing causes. In some cases infection by dried sputum from tubercular scholars is probably the cause of tubercular disease in the teacher.

Defects of Vision.—Myopia (or short sight) is very common amongst school teachers. Amongst 104 teachers in the Training Department at the Victoria University the writer found that 33 suffered from well-marked myopia (=31·7 per cent.). This defect had usually commenced when the teacher was a school pupil. It often increases during the period at the training college, and sometimes afterwards. Hereditary tendency has some influence, but overstrain of the eyes at school is a very important cause. This overstrain is chiefly due (*a*) to prolonged use of the eyes for fine, near work; (*b*) to working in defective light; (*c*) to the book or paper being too close to the eyes; (*d*) to the bad type of the books read. The type of school books is still unsatisfactory. Cohn's minimum type is a fair standard of the smallest type which should be used. Amongst 250 school books examined by the writer in 1906 in Manchester, 111, or 44 per cent., were defective as regards the type.

When the teacher commences his professional work the mischief is usually already done as regards myopia, but the condition may be made worse by the injurious influences described.

Astigmatism, hypermetropia, and other defects of vision often occur amongst teachers. It is important that glasses should be used when the defect can be corrected thereby. By the use of glasses the defect may often be prevented from progressing, and troublesome headaches may be avoided.

From a review of the diseases and affections from which school teachers suffer, it is evident that many of these ailments are due, indirectly or directly, to the teacher's work. (*a*) Overstrain of the nervous system predisposes to neurasthenia, neuroses, several forms of headache, Graves's disease, diabetes mellitus, &c. (*b*) Overstrain of the voice leads to various affections of the throat. (*c*) Overstrain of the eyes is a most important factor in the causation of myopia. (*d*) The bad ventilation of the schoolroom, insufficient open-air exercise, overwork, and other unsatisfactory hygienic conditions associated with the teacher's profession, predispose to tubercular diseases.

HISTORY AND CURRENT EVENTS.

The Jewish question is always with us. Every European State has attempted various solutions of the problem. There are still some folk who think that this people will ultimately return to Palestine and possess that country as they did in the time of their national kings. But since it is obvious that Palestine would not be large enough for the whole nation, there have been attempts made by some of their number to find some territory in other parts of the world where they would be allowed to settle and where they might dwell in security, "every man under his own vine and fig tree." Various districts in Africa have been studied with the view of Jewish colonisation, but the latest idea is to take advantage of the Turkish intention to develop the latent resources of Mesopotamia. It is proposed that the Jewish Territorial Organisation shall make a contract with the Turkish Government, and secure this work for their people. Thus Israel would return to their ancestral homes, the neighbourhood of "Ur of the Chaldees," and of the scene of the captivity into which they were deported by kings of Babylon.

The folk of North Italy, and especially of Milan, have this summer been celebrating the jubilee of the annexation of Lombardy to Piedmont. We have no space to dwell in detail on the memories thus evoked, and we must refer our readers for the story of the year 1859, with its victories and its disappointments, to the books, now plentiful, which trace the growth of Italian unity. There they will learn of the aspirations of Mazzini, of the masterful diplomacy of Cavour, and of the strange idealism and shifty policy of Napoleon III., all of which contributed to the final result. Two years hence Italians at large will celebrate the all but completion of the great work, and "there is good reason to believe that the Austrian and Hungarian Governments have now decided to take part officially in the jubilee exhibitions at Turin and Rome." In 1859–61 it was supposed that the attainment of Italian unity would upset the European system, and Cavour had to walk warily lest Austria should receive help in the name of "law and order." But Europe has survived these changes, and the Austrian Government now acknowledges that the settlement of Italy in 1815 was not in the eternal nature of things.

British North America is divided into two very unequal parts, the Dominion of Canada and Newfoundland. The latter, our oldest colony, received the right to have a Legislature in 1832, and in 1855 it was granted responsible government. In 1868 it refused to join the newly formed Dominion of Canada, and has therefore had a political history of its own. Last November the general election to the House of Assembly resulted in a tie. Of the thirty-six members, exactly half were supporters either of the Prime Minister, Sir Robert Bond, or of the Opposition leader, Sir Edward Morris. As the Speaker must be chosen from the members, his election would put his party into a minority, and for a time there was a deadlock. In spite of the expense and trouble there was therefore a new election, and Sir Edward Morris is now in power with a majority of sixteen. The whole history, both ancient and modern, is an illustration of how the Empire is governed. Each part is left to manage its own difficulties, and solves them in some half-illogical way.

But the independence, under the British Crown, of Newfoundland, results in her having neighbours, and States which have neighbours almost invariably have subjects of dispute with them. One of Newfoundland's neighbours is the United States of America, and the dispute between

the two concerning the cod and other fisheries, which are the chief support of the inhabitants of the colony, is as old as the existence of the independent republic. Another is the Dominion of Canada; and as Newfoundland administers Labrador for the British Empire, there are disputes as to the boundary of that district, just as there were a hundred and fifty years ago between Great Britain and France as to the limits of "Acadie." It is of interest to note the tribunals to which these two disputes are respectively to be referred. The latter is to be settled by the Privy Council at Westminster, the former by the Hague Court of Arbitration. So it is proposed in the recent "Speech from the Throne" in Newfoundland. What is the difference in the "sanction" of these two tribunals? Is it more effective in the one case than in the other?

ITEMS OF INTEREST.

GENERAL.

The King visited Rugby School on July 3rd and opened the new speech room, with seats for more than 1,000 persons. In the reply to the address of the school the King said: "Rugby is notable, not only for its successes in scholarship, not only for its men of letters, but even more for its high ideals of honour and manliness and public spirit, and all those qualities that make our public schools the finest places of education in the world. These ideals and these qualities, strenuously taught by her great leaders, and handed on as a cherished tradition from generation to generation of her sons, have left the mark of Rugby deep, not only throughout these islands, but throughout the Empire and in every part of the world. Carry with you these traditions when you who now listen to me are scattered, as scattered you will be in a few years' time, far and wide, and wherever your lot may be cast see that you uphold the great name of your school and prove yourselves worthy of those who have gone before you. Remember that to do this you must take advantage of the wealth of opportunities offered you here, in school and out of school, opportunities of developing both mind and body, such as you will never afterwards have in the same abundance."

Lieut. Shackleton's famous Antarctic expedition was described by Mr. B. C. Wallis in our issue for May last (p. 161). On the occasion of Lieut. Shackleton's lecture to the Royal Geographical Society the chair was taken by the president of the society, Major Leonard Darwin, who described an interesting way to form an adequate idea of Shackleton's accomplishment. He said: "The feat performed by Mr. Shackleton will for ever remain notable even if examined in the coldest light of geographical science; for he has succeeded in penetrating for more than 400 miles into hitherto absolutely unknown land. Let us imagine England, Scotland, and the North Sea to beyond the Shetland Islands a dreary expanse of ice and snow, with a few isolated rocky masses showing through the frozen covering. Then let us imagine ourselves leaving London on foot for the north, a small party of men and ponies. At Edinburgh—equivalent to Scott's furthest—we enter a region never before traversed by man. Onward we trudge, losing our last surviving pony at Inverness; on past the northernmost point of Scotland, on across the frozen North Sea, finding high mountain ranges at the Shetland Islands. We drag our sledges until, 240 miles north of John o' Groat's, further progress becomes absolutely impossible. And then comes the even more arduous return march, without ponies, for 752 miles as the crow flies, and far more in actual distance travelled. Let us imagine such a journey as this, and it will help us to realise the marvellous feat of Mr. Shackleton."

No changes of special importance have been made by the Board of Education this year as compared with last year in the regulations for technical schools, schools of art, and other forms of provision for further education in England and Wales. The amount of each of the Royal Exhibitions, &c., tenable at the Royal College of Art, and the Imperial College of Science and Technology, South Kensington, has been raised from £50 to £60 per session. The Royal Exhibitions and National Scholarships tenable at the Imperial College of Science and Technology have been combined as Royal Scholarships, the competition for which is to be conducted on the lines hitherto adopted for the award of National Scholarships. In place of the former studentships-in-training in science the Board has established special studentships for teachers of science and technology who are qualified to enter on the third and fourth year of the course provided at the Imperial College.

The July Cambridge Local examinations were held at 146 centres in the United Kingdom and four centres in the Colonies. The total number of candidates was 8,022. In the regulations for the 1910 examinations, we notice the following changes. The conditions for passing in the English section in the Preliminary examination have been altered. In Latin, in the Preliminary examination, candidates are allowed to take unprepared translation as an alternative to the set book. The maximum number of subjects for which Junior candidates may enter has been reduced. In the Junior examination *separate* papers in Catechism and Common Prayer are no longer set. Senior candidates are not allowed to take more than three subjects in the Physics section. Changes have been made in the schedules for Senior Practical Chemistry and the Natural History of Animals.

Excellent work is being accomplished in the domestic economy training department of the Battersea Polytechnic, London. At present a large staff teaches 130 students over eighteen years of age. Since the department was opened in 1894 more than 400 students have obtained diplomas, and are now occupying responsible positions in secondary and elementary schools throughout the British Isles. Former students are holding, too, appointments in Australia, Tasmania, South Africa, Canada, &c. Students of the training department attend, in their first year, a course in "science as applied to household work," which includes physics, chemistry, physiology, and hygiene. This course is taken in addition to the purely practical work of the domestic arts. During the second session the scientific basis of knowledge thus obtained is applied in the practice kitchens, laundries and housewifery rooms, and hygiene laboratories. In the third year's course the same subjects are treated in greater detail, special attention being directed to bacteriology and the examination of food-stuffs. The main objects of the science work are as follows: (*a*) to explain, so far as possible, the chemical composition and properties of the materials dealt with in household work; (*b*) to explain the principal chemical and physical changes taking place in the common household operations involved in cookery, laundrywork, &c.; (*c*) to give a training in the principles of scientific method. Special stress is laid on the fact that household work generally is really an application of a number of facts and principles in chemistry, physics, hygiene, bacteriology, &c., and that, in order to understand the ***rationale*** of the ordinary household processes, a knowledge of the general principles of the branches of knowledge just mentioned is necessary.

THE annual report on higher education of the education officer of the Education Committee of the London County Council for the year 1907–8 is now available. It shows there are fifty-one secondary schools in London aided by the Council. The Council's grants are paid partly with the view of enabling the schools to accommodate a larger number of pupils than would otherwise be possible, and partly with the view of increasing the efficiency of the work. The total grant for the year 1907–8 was £83,500, of which about £35,000 was estimated to be due to the schools as fees in respect of the attendance of the Council's scholars and about £48,000 was maintenance grant in addition to such fees. The other sources of income of these schools were as follows: endowment, £54,000; fees (other than those of Council's scholars), £75,000; Government grants, £43,000. Besides the maintenance grant, the Council voted equipment grants amounting in all to £3,730 to twenty-nine schools, and also the following building grants: £2,500 to Alleyn's School, Dulwich, £5,000 each to the Camden School for Girls and the North London Collegiate School, £1,000 to the Coopers' Company's School, £1,000 to the Godolphin and Latymer School, £2,500 to Highbury Hill High School for the purchase of a site, and £3,000 to James Allen's School, Dulwich. The Council opened four new secondary schools of its own at the beginning of the year under review—two for boys, viz., Camden, with an accommodation for 270, and Brockley, with places for 127; and two for girls, Wandsworth for 90 girls and St. Pancras for 170. The total number of secondary schools maintained by the Council is now sixteen.

THE sum of £20,000 for the permanent endowment of a professorship of German, to be connected with the name of Schröder, has been offered through Baron Bruno Schröder to the University of Cambridge by the firm of Messrs. J. Henry Schröder and Co.

WITH the view of reducing the risks of infection in schools and of obviating the necessity for the closure of schools to check the spread of epidemics, various education committees have recently been conducting experiments in disinfection. Attention may be directed to those inaugurated by the education committees of Bucks and East Suffolk. In both cases the results have been encouraging. In the former case the percentage attendances for the whole year, February 1st, 1908, to January 31st, 1909, were: disinfected schools 92·98, non-disinfected schools 92·22, a difference of 0·76 per cent. in favour of the disinfected schools. This improvement is equivalent to an increase of grant in the county of Bucks of about £500 per annum. The cost of the process for twenty-four schools for one year was £30 0s. 3d. The estimated increase in the grant earned in the disinfected schools for the whole year was £51 5s., leaving a balance of about £21 5s. after paying the expenses of the process. The experiments in East Suffolk were equally successful. Forty schools were selected, equal, so far as possible, in size, character, and condition of building. In twenty of these schools the walls, furniture, and floors were sprayed daily with a liquid disinfectant; in the remaining twenty no operation other than washing the floors and furniture with hot water at the commencement of the experiment was carried out. During the period covered by the experiment the percentage of absence caused by sickness in the disinfected schools was 4·65, and in the non-disinfected 5·5. For the seven months the increase of Government grant in the twenty disinfected schools was £31 9s., equivalent to £54 7s. for these schools for a whole year, and £452 2s. for the whole county for the year. The cost of the disinfectant was £23 6s. 6d.

THE Warwickshire County Council is to be congratulated on starting a series of educational essays: Educational Essays, No. 1, "A Method of Literature Teaching," by Alice Reeve, 22 pp., paper covers (Warwick: W. H. Smith and Son). An inspector, it seems, suggested the idea; and though there is not much about teaching in Miss Reeve's few pages, there is a good deal about method. The method seems to be: (*a*) collect good books, considering girls' tastes; (*b*) put your library into the hands of a person interested; (*c*) disregard marks and formal examinations as far as possible; (*d*) get the reading applied in essays, and make it part of the moral and mental apparatus of the class. Thus it may be seen that these misguided ladies, for many seem to be concerned in it, contravene every rule which the average teacher follows; may they long continue to contravene them. The lists at the end of the essay are full of little mistakes, and there are some strange omissions. Perhaps the compilers would not be offended at being referred to Mrs. Parsons's well-known list compiled for the Parents' Union, and to Mrs. Devonshire's list of French books for girls (*National Review*, 1906); the examination papers are not yet out of the ordinary groove. But the spirit of the essay, seen in every paragraph, is the right spirit, and the only spirit worth considering in the "teaching" of literature.

> "All her thoughts as fair within her eyes
> As bottom agates seen to wave and float
> In crystal currents of clear morning seas."

TEACHERS of geography would do well to add to both their store of first-hand information and their stock of illustrative pictures the supplements now being issued to the *Illustrated London News*. The supplement for July 10th, 1909, for instance, entitled "The Web of the World," is an account of Manchester and its great industries, and has for its main *raison d'être* the occasion of the King's visit to Manchester. This great city is associated in the popular mind with cotton, and there is naturally a full treatment, with complete and useful illustrations, of processes in connection with this fibre, and these are especially good from the point of view of modern developments in both products and machinery. The history of the changes of the last fifty or seventy-five years is well shown by references to the growths of such businesses as those connected with the names of Rylands, Horrocks, and Bannerman. The extent to which the term "Cottonopolis" applies, not only to the city, but to the surrounding district, is well shown, as the description of factories refers now to Bury, now to Preston, now to Stalybridge and Dukinfield. But the many-sidedness of a modern city is perhaps of more importance than the details of its main industry; and here one notes text and letterpress in reference to the manufactures of such varied commodities as lard, cigarettes, hard goods, hats and caps, ready-made clothing, rubber heels and boot polishes, tiles and pottery, alum, and waterproofs. The picture is completed by references to the Exchange, to banking and insurance, and to the Ship Canal, and thus the thirty-six pages contain information which forms a valuable store of matter for lessons and studies in geography.

A LETTER to the editor of the *Morning Post* directs attention to what is certainly a defect in the time-table of certain College of Preceptors' examinations. In the June examinations of this year the papers set on the second day were so numerous that an average candidate was perforce under examination for eight or eight and a

half hours. The Latin paper, moreover, came on at a time when many of the candidates had already been under examination on that day for five and a half hours. It would be difficult to find convincing arguments in favour of such an arrangement as this, and we have little doubt that the council will readjust the time-table now that the over-pressure to which the present scheme leads has been pointed out.

The June number of *School Science and Mathematics* contains an interesting article on the important question of afforestation; it is an extract from ex-President Roosevelt's message to Congress in December, 1908. While emphasising the great damage done by deforestation in the Mediterranean countries of Europe, Asia, and Africa, and also in certain regions of the States, it proves in full detail the less well-known damage done in eastern Asia. Several excellent full-page reproductions of photographs show in vivid fashion the appalling desolation to be found in several districts of northern China, which not many centuries ago were some of the most fertile and beautiful spots in the world. In the same periodical an article on the physiological effects of alcohol (continued from the May number) gives many quotations and data which will appeal to those interested in temperance reform. Teachers of chemistry will appreciate the articles on the sequence of topics in elementary chemistry, the teaching of chemistry in secondary schools, and on some simple experiments in chemistry for use in elementary schools. Contributions on imaginary quantities in elementary mathematics, and on the duodecimal system, will appeal to mathematicians.

The second volume of the report of the U.S. Commissioner of Education for the year ended June 30th, 1908, has reached us. It provides valuable statistics concerning the present state of secondary education in the United States. The number of secondary-school pupils in both public and private institutions in 1890 was 367,003, or about 5,900 to the million of population; in 1895 the number of such students had increased to 539,712, or 7,900 to the million; in 1900 the number was 719,241, or 9,500 to the million; while for the year 1908 the number of secondary-school students aggregated 954,720, or about 10,980 to the million population, or more than 1 per cent. As regards the remarkable growth of public high schools in America during recent years, it may be said that in 1890 there were 2,526 of these schools, with 202,963 students, while in 1907 the number of schools had increased to 8,804, with 751,081 students. The number of private high schools increased up to 1895. Since that date there has been a decrease, the number in 1908 being 1,320, with 91,652 students.

SCOTTISH.

Sir Harry Reichel, principal, University College of North Wales, on the invitation of various associations in the West of Scotland interested in the development of manual training, delivered an address in the High School, Glasgow, on "Handwork as an Element of a General Education." The first consideration in deciding whether a subject should be introduced into the school curriculum ought to be, he maintained, its suitability for developing mental faculty and moral fibre. For the past quarter of a century elementary and secondary schools have nourished in the boy what has been well called "the black-coat heresy," the idea, namely, that a lad who has been to school for any length of time would be bemeaning himself if he went into any occupation where he could not wear a black coat and a white collar. Any educational system which tends to unfit those who pass through it for skilled manual employment, or to produce in them a distaste for such employments, stands self-condemned. Both on physiological and psychological grounds manual training deserves a prominent place in the school time-table.

A memorial has been presented to the Secretary for Scotland by forty-two Scottish members of Parliament praying him to take the necessary steps to have the Education Department removed to Edinburgh, so that it may be brought into closer touch with the Scottish people and their education authorities. Mr. Pirie, M.P. for North Aberdeen, in a covering letter to the memorial, anticipates and answers most of the arguments that have been advanced against making the change. It has been stated that if the transfer were made, members of Parliament would lose the opportunity of personal contact with the Secretary of the Education Department. Mr. Pirie points out that it is extremely rare for a member of Parliament to interview the permanent secretary, and it is still rarer for him to seek an interview with a member of Parliament. In answer to the argument that the Department should be in close touch with the Treasury, it is shown that the estimates are made up only once a year when the permanent secretary may for a time be in attendance. It is pointed out that this is done in the case of the Local Government Board and the Fishery Boards, the headquarters of which are in Edinburgh, and no inconvenience has ever been experienced. If the Secretary for Scotland resolves once more to turn a deaf ear to a petition so extensively signed, he will find it no easy matter to answer the case so ably put forward by Mr. Pirie, and it need not be wondered at that he has asked for some time to consider his reply.

No question within recent years has occasioned so much trouble to the Scottish Office, and especially to the Education Department, as the allocation of the balance of the Education Fund. The financial clauses are said to have wrecked four out of the five abortive Education Bills, and now they threaten to interrupt the smooth working of the new Act. The whole country is split up into two rival camps, the one seeking to retain the Department's present scheme unaltered, the other striving to set up a new scheme with terms more favourable to itself. A private conference between representatives of the rival education authorities was held in Edinburgh in order to endeavour to arrange a readjustment of the scheme of allocation which would be fair to both parties. Dr. Struthers, Secretary of the Education Department, presided, and after a full interchange of views it was resolved to accept the existing minute for the present year, and to summon a further conference in the autumn with a view of considering an amended minute for the following year. Notwithstanding the general agreement thus arrived at, some of the authorities adversely affected by the present minute decided to have the question raised in the House of Commons, and accordingly a motion was made by Mr. Munro Ferguson, M.P., to refuse assent to the proposed minute. The Lord Advocate, in a conciliatory speech, pointed out that the present scheme was merely tentative, and that after they had garnered the experience of the present year they would be able to come forward with a scheme more likely to meet the views of all parties concerned.

At the June meeting of the Scottish Modern Language Association great satisfaction was expressed at the reforms that have been introduced into the Preliminary examinations and the graduation curricula of most of the Scottish universities. French and German for the first time are to receive an equality of marks with Latin and Greek, and neither classics nor mathematics are any longer to be compulsory for all students.

DR. JOHN HALL, a graduate of Glasgow University, who died in April last, has left a sum of £35,000 to the University Court of Glasgow University as an endowment for the foundation of tutorial fellowships in medicine and surgery.

IRISH.

THE opposition to the new Intermediate Rules found expression during the time they were lying on the table of the House of Commons in a Parliamentary protest. Mr. Lonsdale, M.P., moved that a humble address be presented to his Majesty praying that the Rules be not sanctioned until they are amended by the omission of Rule 12 (*b*), which provides that a student shall be ineligible for examination in a grade in which he has already passed. He suggested that if the object of the Intermediate Board was to save money it could be satisfied by withholding payment from a student passing on a second occasion. The protest was supported by all the Irish members present, but Mr. Birrell, M.P., remembering, no doubt, the inglorious encounter in which his immediate predecessor had engaged with the Intermediate Commissioners, refused in any way to interfere. He even went further and stated that in his opinion the rule was a good one and educationally sound, and as to the alternative proposed, he would have none of it. One can quite sympathise with Mr. Birrell's position, but at the same time he quite missed the point, which, put briefly, is this: Do the intermediate schools receive an adequate grant from the Treasury or not, and, if payment by examination is to be continued, is it right to lessen the amount received by the schools by any such rule as 12 (*b*)? It is no doubt easy enough to deceive the public by specious technicalities, but the improvement of education depends largely on the amount of income which the schools receive.

THE first conference of the Classical Association of Ireland was held with great success on June 18th and 19th in the Royal College of Physicians, Dublin. The first meeting was presided over by the president of the association, the Right Hon. Mr. Justice Madden, Vice-Chancellor of the University of Dublin. The opening address was delivered by Prof. Magennis, on "The Place of Classics in Modern Education," and the other speakers were the Right Hon. Lord Justice Fitzgibbon, Prof. Culverwell, and Mr. G. Fletcher, assistant secretary of the Department. On the 19th there was a series of discussions and papers. The first was on a motion by Prof. Henry, "That set books, at least in university courses, are disadvantageous to classical studies." This motion, which was only tentative, served its purpose as affording ground for a discussion in which the chief speakers were Mr. E. H. Alton and Rev. J. Keane, S.J. The next paper was by Prof. Goligher, on "Classical Archæology in Secondary Schools." The last motion, in the unavoidable absence of Prof. Exon, was moved by Mr. J. Thompson, headmaster of the High School, Dublin, viz.: "That in view of the recent introduction of inspection the attention of the Commissioners of Intermediate Education be called to the importance of a uniform pronunciation of Latin in Irish schools." Mr. Thompson spoke in favour of the reformed pronunciation, and was supported by Prof. Semple, Prof. Henry, Mr. O'Nowlan, and Rev. Prof. Browne, and the motion was carried unanimously.

A GARDEN-PARTY was given to the association in the afternoon by the president, and in the evening there was a conversazione, at which Rev. D. J. Finn, S.J., showed a number of slides illustrating a new interpretation of the seated divinities of the Parthenon Frieze, and Prof. C. Waldstein, of Cambridge University, lectured on "Herculaneum," and prefaced his lecture by an eloquent address on classical study as a means of culture. A vote of thanks to Prof. Waldstein was moved by Mr. Justice Ross.

THE Queen's University, Belfast, will be in working order next term. Arrangements for this purpose are being hastened forward, and early in July the Commissioners made the following new appointments—Professorships: modern history, Mr. F. M. Powicke; economics, Mr. T. Jones; botany, Mr. D. T. Gwynne Vaughan; French language and Romance philology, Mr. D. L. Savory; jurisprudence and Roman law, Mr. J. A. Strahan. Lectureships: archæology and ancient history, Mr. K. T. Frost; English, Mr. A. O. Balfour; Celtic languages and literature, Rev. F. W. O'Connell; moral philosophy and history of philosophy, Mr. H. L. Stewart; scholastic philosophy, Rev. D. O'Keeffe; organic chemistry, Dr. A. W. Stewart; physics, Dr. R. Jack; bio-chemistry, Dr. J. A. Milroy; geology and geography, Dr. A. R. Dwerryhouse; and hygiene, Dr. W. J. Wilson.

THE most startling educational event of the past month has been the announcement of the affiliation of Magee College, Londonderry, with Trinity College, Dublin. Having been excluded from co-operation with the Queen's University, Belfast, the authorities of Magee College have come to an arrangement with Trinity College on the following conditions. The ordinary course of lectures in Magee College is to cover the same ground as the ordinary lectures in T.C.D. A student who has attended a two years' course in arts in Magee College shall receive credit for two years in Trinity College on passing the Littlego or Final Freshman examination in the latter. In his third year (the Junior Sophister year) he must attend one term of lectures and pass one subsequent examination in Magee College, and attend one term of honour or ordinary lectures in Trinity; and in his fourth year (the Senior Sophister year) he must, before presenting himself for the degree examination, attend another term of honour or ordinary lectures in Trinity. As soon as a student of Magee College has entered his name on the books of Trinity College, he will be eligible for all honours, prizes, scholarships, &c. The arrangement is for five years. A satisfactory agreement has been made about fees, and it is hoped during next winter to arrange for a new series of University Extension Lectures in Magee College.

WELSH.

THE Calvinistic Methodists are the largest religious body in Wales. At the last General Assembly a discussion on the education question was held. A report from the Assembly's Education Committee suggested that the Government be reminded of the grave injustice under which Nonconformists suffer under the present law, and the urgent need of relief from an intolerable situation. A protest was also made against granting the right of entry. There was, however, considerable difference of opinion in the Assembly when an amendment was moved, "that the Christian Churches are alone responsible for the religious training of the young, and that consequently State-paid teachers must be freed from all work connected therewith." Directly it was realised that the Bible was thus excluded, it was urged that the people of Wales would not accept the exclusion of the Bible. Nevertheless, twenty-five voted for the amendment, and seventy-nine against.

AT the closing ceremony of the session at the University College of North Wales, Bangor, Principal Sir Harry

Reichel had the satisfaction of referring to litigation which has justified itself in connection with the college. The Eyton-Williams suit has added £10,000 to the scholarship fund. It will enable the college to remove the burden of undergraduate scholarships from the general fund in accordance with the recommendations in the report of the special Treasury committee, and will place £2,000 to the building fund. Sir Harry Reichel pointed out that endowments for scholarship purposes will now be of greater value for in-college awards, as they will enable awards to be continued for further years and for post-graduate work. The college has also won its case against the Inland Revenue claim for income-tax. This means the saving of £100 a year; but the decision affects all colleges, and therefore makes a great difference in the total saving for higher education. Sir Harry Reichel added the interesting point that several colleges have recognised indebtedness to Bangor's action, and have promised to contribute to the legal expenses.

The Aberystwyth County School has just received a report, made at the request of the governors, by Prof. Bryner Jones, concerning the advisability of preparing certain ground now in the possession of the school for the purposes of a school garden, where elementary instruction in agriculture and horticulture may be given practically. Prof. Bryner Jones considers the ground admirably adapted for the purpose. He suggests that tillage operations be begun next autumn. A certain amount of land should be in permanent specimen plots of grass and clover seeds and other agricultural plants. Another portion might be used to illustrate the principles of rotation of crops, manuring, &c., and a third portion worked as an ordinary kitchen garden. He thinks it unfortunate that owing to examination syllabuses, time-tables, &c., schools, especially those in rural districts, are not given greater freedom to adapt their teaching to their surroundings, more especially by giving a bias to the science teaching in the direction of rural pursuits. This is as important, and in many cases more practicable, than the teaching of agriculture as such.

In the Merioneth Education Committee the resolutions of the Monmouthshire and Anglesey Education Committees with reference to the provisions proposed to be introduced into next year's Code having been considered, it was resolved (*a*) that a protest be made against any increased charge upon the rates; (*b*) that the Government be urged to extend the limited period now permitted for the repayment of loans obtained for the erection of schools to at least sixty years.

In the prefatory memorandum to the Regulations for Secondary Schools, attention is directed to the rule as to a free place, which it may be interesting to reproduce. "It is not meant that a free place once given cannot be withdrawn, in any circumstances whatever, but that in order to count as a free place the exemption from fees must apply to the whole school life of the pupil, and that holders of free places shall be placed on the same footing with regard to the advantages of the education given as ordinary fee-paying pupils. No conditions as to conduct, progress, or attendance may therefore be attached to the tenure of a free place, which do not apply equally to all the pupils of the school. Failure to reach a reasonable standard of behaviour, diligence, and progress is, in the view of the Board, a valid reason for removing pupils from the school, whether they pay fees or not, and if the removal of fee-paying pupils is required in such circumstances, the same rule is properly applied to holders of free places."

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Tables synoptiques de Phonologie de l'Ancien Français. By H. E. Berthon and V. G. Starkey. 28 pp. (Oxford: Clarendon Press.) In stiff boards, 3*s.* 6*d.* net; in paper covers, 2*s.* 6*d.* net.—These admirable tables amply fulfil their purpose of serving as a *guide pratique et commode aux jeunes gens qui débutent dans l'étude de la philologie.* The university lecturer will welcome their appearance no less than the private student. The arrangement is lucid, the printing excellent, and it is a great advantage to have the sounds transcribed in the alphabet of the International Phonetic Association. The price is fortunately not so high as to be prohibitive for the average student; and we do not doubt that these tables will be widely used, abroad as well as in England.

Legends, Tales and Poems. By Gustavo Adolfo Becquer. Edited by Everett Ward Olmsted. 288 pp. (Ginn.) 4*s.* 6*d.*—To stimulate a student's interest in the literature of Spain nothing could be better than a book of this type. Thanks to Prof. Olmsted's zealous researches we now possess an excellent "Life" of Becquer that enables us to appreciate better the charming work of a sympathetic poet. Who has read any of Becquer's poems and not desired to know more about the man? The chapter on Spanish prosody will be welcomed by students who, reading without a teacher, have been puzzled by a versification which seems at times to disregard all metrical requirements. One of the charms of Becquer's prose is its simplicity; hence few notes are needed on grammatical or idiomatic difficulties; but the editor never fails to supply the reader with much information on geographical or historical matters that may elucidate the text.

Molière, L'Avare. Edited by O. H. Fynes-Clinton. xx+172 pp. (Macmillan.) 2*s.* 6*d.*—The editor supplies a brief but adequate account of the life and works of Molière; notes, which afford clear evidence of his competence; and a useful summary of the chief grammatical peculiarities occurring in the text. There are, further, the appendices which are a feature of Mr. Siepmann's series. They include "Words and Phrases" and "Sentences on Syntax and Idioms"; also passages for translation into French from various sources and of considerable difficulty; we wonder what the schoolboy would make of "the semi-barbarism of merely giddy communities and feverish emotional periods repel him"! We also note a number of subjects for free composition. Altogether a serviceable edition of Molière's grim comedy.

The Truth about the Teaching of Foreign Languages. By W. Pulman. x+198 pp. (Published by the author at Sale, near Manchester.) 1*s.* net.—An extremely wordy production; all that the author has to say might well have been compressed into fifty pages, if not less. He criticises existing methods adversely, praising instead, as the royal road, what he calls the E. and S. method, which is to be given to the world if a thousand readers send in their money. What the method exactly is he does not clearly define. The author describes himself as a man of business, and although he has studied his subject for thirty years, he seems to know little of the recent advance in linguistic method. It seems hardly necessary to deal further with this booklet; we can wait patiently for the appearance of "Linguistry by the E. and S. Method"—if it ever appears.

Polyglot Phrases. Collected and arranged by L. N. Worthington. vi+348 pp. (Bell.) 5*s*.—The preface maintains that "an intelligent and diligent pupil should *easily* learn these phrases in six months, and would then find himself in possession of a working knowledge of any of these four languages." The author has collected 2,641 phrases, and gives their equivalent in French, Italian, and German; in what sense he can claim to have "arranged" them is not obvious. The renderings are generally idiomatic, but they are not always correct or helpful. What is one to make of "buy some better one, since it is bad"? or "have you changed it for him"? or "this vest [*sic!*] fits you well"? Misprints are not uncommon; *e.g.*, *uberrascht* (160), *fossé* (253), *mus* (296), *est* (307), *presqu'à* (2219). We do not know to whom this book could be recommended.

Classics.

Proceedings of the Classical Association, 1908. With Rules and List of Members. 188 pp. (Murray.) 2*s*. 6*d*. net.—The work of the Classical Association needs no commendation to readers of THE SCHOOL WORLD: it is good to see that its membership increases and its work flourishes. There are now strong branches at Manchester, Birmingham, and Liverpool; we hope these may be followed by others at provincial universities. This volume of *Proceedings* contains the president's address and a number of papers. The president, Mr. Asquith, dealt in generalities; but with some astuteness he managed to bring into his address most of the names prominent in the association. He sketched the course of recent activity and pointed out how many forms this had taken. The volume gives two important reports, with the discussions upon them: one on the pronunciation of Greek, recommending a reform similar to that which has been made in Latin; one on curricula, giving the results of an inquiry into the conditions of classical teaching, and suggestions for improvement. Prof. Sonnenschein, in offering this report to the association, laid stress on the need for simplifying grammatical terms, a suggestion which has since borne fruit. Among the less technical papers we must name the "Teaching of Greek Choral Metre," by Prof. H. Browne, and "How Homer came into Hellas," by Prof. Mackail. Prof. Browne advocated a melodic rendering of the choral metres, and he gave instances on the gramophone. Prof. Mackail, while assuming, of course, the earlier lays, ascribes the "Iliad" as it is substantially to one Homer; the "Odyssey," perhaps, to a second; but he was not sure that the author was not the same. Prof. Sonnenschein in another paper discussed the "Unity of the Latin Subjunctive," tracing the various senses of it to "shall."

High School Course in Latin Composition. By C. M. Butler and A. J. Inglis. xiv+464 pp. (New York: The Macmillan Company.) 5*s*.—This book is designed to cover the last three years of the American school course, answering, apparently, to the middle-school work of the English system. The vocabulary is based on Caesar's "Gallic War" and the speeches of Cicero read in American schools. Prof. Lodge's "Vocabulary" represents this. There is a summary of syntax prefixed. Part I. contains twenty-eight lessons based on B.G. I.–IV., partly disconnected sentences and partly connected paragraphs; Part II., twenty-six lessons based on Cicero; Part III., forty lessons, also sentences and connected prose. Each exercise has its portion of grammar and vocabulary, these being covered twice in the twenty-four sentences, and an exercise for oral translation. The syntax calls for little remark. It contains the usual things, but its arrangement is not always to be commended. Thus two adjoining sections are: "5. A noun in apposition with two or more nouns is in the plural. . . . 6. An appositive is sometimes best translated by a clause of time, cause, &c." No. 6 is not parallel to No. 5, and if given should be a note. A similar remark may be made of 40. There is a serious omission in 53, where *quisque* alone is translated by "each," and no caution given that it must be used with *se*, numerals, or relatives. In 48 the indefinite *uter* (though rare) might be added to *quis*. An ingenious table in 19 shows clearly the use of the possessive adjectives, and there are some other useful devices for helping the mind through the eye. The exercises are very systematically developed, and as accessories would undoubtedly be useful, but regarded as the whole practice work for three years seem certain to produce weariness in the learner. The book is also awkward to use, since the special vocabularies are put together in three blocks, one only of which comes at the end.

Tacitus, Germania. Edited by J. F. Stout. viii+74 pp. (Clive.) 2*s*. 6*d*.—This book has a good introduction and a well-printed text. The notes give useful information on geography and subject-matter; but we cannot approve of the explanations of elementary things that are freely given. If the editor points out the omission of *est*, the instrumental ablative, what words are joined by *et* and *que*, and the like, what is left for the reader's intelligence? There are, of course, plenty of real difficulties in the "Germania" where help is necessary.

English.

(1) Belles Lettres Series. ***English Drama.*** **Two vols. Two plays by Otway (351 pp.) and two by Middleton and** Rowley (268 pp.). Edited, with long introductions and notes. (Heath.) 2*s*. 6*d*. each volume.

(2) ***Macaulay's Essays; John Hampden; Sir William Temple; War of the Spanish Succession;*** **Defoe's *Captain Singleton*.** (Blackie's English Texts.) 6*d*. each.

(3) ***Northland Heroes.*** By Florence Holbrook. 124 pp. 6*d*. ***Tales from the Eddas.*** By E. M. Wilmot-Buxton. 160 pp. (Harrap.) 9*d*.

(4) Cassell's *New Fairy Book; Fairy Tales in other Lands; Reynard the Fox.* All with coloured illustrations. 6*d*. each.

(5) ***Selections from Browning.*** 88 pp. Edited by Mrs. M. G. Glazebrook. (Macmillan.) 1*s*.

(6) ***Monologues for Recitation.*** By E. Fogerty and A. Nankivell. 48 pp. ***Dramatic Scenes from Great Novelists.*** By R. L. Patry. (Swan Sonnenschein.) 6*d*. each.

(7) ***An Evening with Shakespeare.*** By P. Maskell Hardy. 118 pp. (Chatto and Windus.) 1*s*. 6*d*.

Three new volumes of the Belles Lettres Series (1) show how very carefully the standard of editing and printing is maintained. The old English drama is represented here by "The Orphan," "Venice Preserved," "The Spanish Gipsie," and "All's Lost by Lust." Of course, we have two plays only to a volume, less than in the Mermaid Series; but the introductions and the accurate scholarship atone for the brevity. The editors admit that Rowley does not, so much as many others, merit reprinting. The third volume in the series is "Select Poems of Shelley." It is a pity that the "Prometheus" is so lightly touched on in introduction and notes; surely by the "Prometheus" in days to come will Shelley, as a great poet, be judged.

Messrs. Blackie continue their texts for schools (2), now attaining very respectable proportions and supplying excellent reading matter for higher forms. Two books on northern legends (3) are quite welcome; even now the Scandinavian mythology is none too well known. McDougall's "Tales from History," Book II., is issued

at 5*d.*; the series has been praised before. Three books for children (4) are well illustrated; "Reynard the Fox" is one of them. Probably Reynard is no better understood by children than Gulliver; and no publisher reprints the Caxton for higher classes. A series of selections from Browning (5), edited, with introduction and notes, by Mrs. Glazebrook, will appeal to the highest classes only. Two little books for young people who can act (6) are sent to us; we wish there were more encouragement for the child-player; but, as yet, people do not believe in him. Perhaps, however, Mr. Maskell Hardy does: a most delightful evening with Shakespeare (7) has been arranged by him. Here we have actors photographed, scenery described, the old songs arranged with both notations, readings printed, and general directions given. Originally intended for the children of a primary school, the "evening" could not have proved very expensive. Probably many schools will take up this suggestive and excellently carried out idea. As the editor says, you *may* wear silks and satins on the stage; but *sateen* will do.

The Bruce. By John Barbour. Edited by W. M. Mackenzie. xxiii+547 pp. (Black.) 5*s.* net.—It is pleasant to find a Scottish house publishing so scholarly an edition of "The Bruce." Undoubtedly to most readers of to-day the chief interest of the poem lies in its historical rather than in its literary merits—however great the latter may be. From Green's "petulant aside" to the curious inconsistency of the second volume of the "Cambridge History of Literature," Barbour has been roughly handled; but Mr. Mackenzie, by a minute examination of contemporary sources, shows how modern historians have arrived at a very uncritical conclusion. He shows clearly that, however misleading may be Barbour's "outline" as documentary history, his details are singularly accurate. Had Prof. Tout been able to read Mr. Mackenzie's edition before writing his volume for the "Political History," he would hardly have remarked that it was impossible to control Barbour's details from other sources! From the literary point of view the edition is equally satisfactory, and students should be well satisfied and extend a hearty welcome to Mr. Mackenzie's work. "There has been no modernisation of the language save in the case of the rubrics," but the author has taken "a few harmless liberties with its alphabet and restricted certain of the letters to their modern values, substituting for others a modern equivalent"—a concession to the general reader of which no one will complain.

History.

All the Monarchs of Merry England. By R. Carse. Unpaged. (Fisher Unwin.) 15*s.*—This is a sumptuous volume, measuring 10 in. by 8½ in. and 1½ in. thick, and bound in leather. The most striking feature is a series of full-page coloured humorous pictures by W. H. Robinson, who also adorns the margins of every page of text with vignettes, as well as the insides of the covers. The text is in rhyme, and is based, so at least we judge from internal evidence, on a certain school book which has been popular for the last half-century. The whole thing is, of course, intended as a comic history of England with illustrations. The periods before William I. and after James II. are treated very summarily, but all between 1066 and 1688 is set forth in serio-comic style, which some may find useful as mnemonics and others as fun. The pictures are delightful.

History of the Latin and Teutonic Nations (1494–1514). By L. von Ranke. Translated by G. R. Dennis. With an Introduction by E. Armstrong. xxxvi+448 pp. (Bell.) 6*s.* net.—This book was von Ranke's earliest work, written in 1824. A translation of it appeared in Bohn's Standard Library in 1887, but has long been out of print. Mr. Armstrong does not think the book by any means perfect, yet there is still a demand for it, and therefore the translation has been revised, and it has been reprinted, partly because it is a good bit of work on a short period, but more, we gather, as a tribute to the great historian who, at the age of twenty-nine, could produce such a piece of historical writing.

Readings in Modern European History. Vol. ii. By J. H. Robinson and C. A. Beard. xxii+541 pp. (Ginn.) 6*s.* 6*d.*—We have noticed the first volume previously. This covers the period since the Congress of Vienna. The plan of the book is a brief outline of events, introducing one or more extracts from contemporary sources or standard histories. It ranges from the French Charter of 1814 to the development of Japan, and does not neglect social and scientific history. The only complaint we have to make is that the treatment of some subjects is tantalising. For example, after some dozen lines about the Dreyfus affair, the only extract given is Zola's famous letter "J'accuse," and there the matter ends. But the period covered is a very full one, and limits of space are a sufficient answer to our disappointment. The advanced student, as well as the teacher, will find the volume exceedingly useful.

The Place of History in Education. By J. W. Allen. vii+258 pp. (Blackwood.) 5*s.* net.—This is an interesting book. Prof. Allen begins by contrasting the two views of history which regard it respectively as a science and as "a pageant," and decides, so far as he thinks any decision possible, in favour of the former. Then he discusses theories of education and its objects, in so far as we have any such, and thinks history cannot find a place in the curriculum of classes under the age of fourteen. Finally, he thinks it almost impossible to teach history without eliminating the personal bias, and illustrates his point by giving three plausible accounts of the Tudor reformation. The whole book bristles with debatable points, and, indeed, would serve well as the starting-point of a discussion for meetings of teachers.

Sea Kings of Britain. (Albemarle to Blake.) By G. A. R. Callender. viii+303 pp. (Longmans.) 3*s.* 6*d.*—The author says that this book contains "short lives of the great admirals from the death of Blake to the birth of Nelson." This is an understatement. Under the titles "Albemarle, Rooke, Benbow, Vernon, Anson, Hawke," the six chapters thus headed contain a sketch of British foreign history during the period indicated, and a fairly detailed account of the naval side of the wars, as well as biographies of the heroes. There is a large number of useful maps and plans; and we should think this book would be interesting and useful for many others than the pupils of the Naval College, for whom, we presume, it is primarily intended.

The Age of the Enlightened Despot. By A. H. Johnson. xxiii+278 pp. (Methuen.) 2*s.* 6*d.*—This is one of six volumes which together tell the story of Europe from 476 to 1878. Its period is 1660–1789, and in a simple, clear way it tells the history of that often tangled diplomacy and war which filled the century and a quarter which preceded the French Revolution. The terminology is not always quite correct; we find "England" and "Holland" instead of "Great Britain" and the "United Provinces," and it is curious to see such a phrase as "from the Meuse to the Scheldt." There are a very few minor errors; but

the student will find this book a good introduction to the period, quite as much certainly as is wanted for our upper forms. Only one thing strikes us as strange. We are left to the end of the book before we are told the reason for the title. In the last five pages the author explains enlightened despotism, yet without a reference to the "Encyclopédie," Voltaire, or Adam Smith. Besides the text there are a chronological table, a bibliography, maps, genealogical tables, and an index.

Finger-posts to British History. By R. S. Rait and J. E. Parrott. 192 pp. (Nelson.) 2*s*.—This book consists of a summary of the chief events in British history printed in column form, and in black or red, ordinary or thick type, according to their relative importance. A second column on each page gives contemporary foreign events, which, however, strikes us as not full enough to be of much use. The divisions are by reigns, and at the end of each reign there are brief notes dealing with the chief topics. There are many diagrams and maps, and at the end there is a glossary of technical and other terms, as well as a number of biographies. There are a few small points which require correction; but the book is well fitted for its purpose as an appendix to the ordinary text-book and for preparation for examination of younger pupils.

Geography.

The Elementary Geography. Vol. i., Physiography. 80 pp. 10*d*. Vol. iii., Europe. 112 pp. 1*s*. By F. D. Herbertson. (Clarendon Press.)—These little volumes, parts of a projected series for very young children, will be welcomed in many schools. They are attractive, illustrated with good full-page pictures, and printed in clear type. Some variations of type, such as printing the names of important towns or products in clarendon, and occasional breaks in the monotony of the paragraphs, by the insertion of small illustrations or diagrams, would have made the books more attractive to a child. The short, easy sentences in which the lessons are written, though they occasionally detract from their literary style, are well calculated to impress upon the pupil the simple facts of geography.

In vol. i., which is devoted entirely to simple physiography, there are some good practical exercises, though the facts in the earlier chapters are somewhat meagre even for small children, and are lacking in illustrative examples, which would have proved an introduction to later volumes. It is surprising to find such a remark as "Some mountains are seen to smoke," which seems dangerously near the exploded fallacy of the "burning mountain." Again, such a remark as the following, "No mountain in our country is a mile high," is calculated to confuse the mind of a small child, to whom the difference between the height of a mountain from its base and its height above sea-level is always puzzling. In vol. iii. the geography of Europe is studied with an intelligent attention to cause and effect that will delight the practical teacher. The importance of the geographical position of various towns is well shown, and it is refreshing, in such an elementary book, to find the St. Gothard route so utilised as to make the difficult geography of Switzerland unusually clear. The scheme of the book is original; Switzerland is taken first as the watershed of the great rivers, and the other regions follow according to the course of these rivers. Though we appreciate the author's plan of avoiding padding, we feel that a few more points of interest about the various towns might have been added.

Self-rolling and Raising System for Wall Maps. (Philip.)—This device is a mechanical contrivance attached to wall maps, intended for use in place of spring rollers. The essential parts are two vertical strings fixed from a projection from the wall, and a kind of dumb-bell projection at each end of the top roller of the map. The strings are fitted with metal ends, which pass through a hole in the roller and then into a slot arrangement. The map, rolled up, is attached in this way to the strings, and thus hangs when not in use. When required, a gentle pull on the bottom of the map causes the map automatically to unroll for display. When finished with, a gentle pull at a string attached to one end of the top roller causes the map to roll up. At present these rollers are supplied attached to Philip's "Comparative Series of Wall Maps," but the publishers can supply rollers for all wall maps. The device is certainly useful, and teachers who are fitting up a room specially for the purposes of geographical teaching should examine this simple contrivance. For use in schools where maps are wanted in many class-rooms, more especially where the maps used vary considerably in width, the publishers should attempt to obviate the difficulty presented by the strings, whereby each width of map requires a pair of strings and each room needs sets of strings to suit the widths of maps used therein. If each room were fitted with a "curtain-pole" arrangement for this purpose, the contrivance should prove of great utility.

Practical Geography. Part II. By J. F. Unstead. 112 pp.; maps and diagrams. (Clarendon Press.) 1*s*. 6*d*.—The second part of Mr. Unstead's book is divided into five sections, and the greater part of two of these is devoted to the treatment of the astronomical theory of the earth's position and movements, and to variations in population, foreign trade, and production. This is, perhaps, somewhat away from geography, and touches on other sciences. With reference to the purely geographical matter, no attempt is made at a regional treatment, either of climate or vegetation. Fourteen principal countries are the subject of exercises, of which those for France may be taken as a sample; the matters treated are: area, population, and density of population; relief; wine production and foreign trade of the country as a whole; the monthly rainfall and temperature of three towns and the population of four towns. It would appear that these exercises are chiefly given for the purpose of illustrating theoretical lessons by the teacher, and not as a training for the pupil in scientific method and investigation. As in Part I., the book is arranged in question and answer form, but in many cases there is a tendency to give the pupils too much help; *e.g.*, on p. 20 the answers to questions on Buys Ballots' Law are given in the same paragraph as the questions. The section on weather changes is well done, but the matter is confined to the weather of Western Europe, and is not correlated with the climatology of other areas. It is left to the teacher to do this, as also to connect the work done in this section on pressure with the consideration of the climate of India and its rainfall. This book, with Part I., is advertised to afford "ample material for a four years' course." Some suggestion as to the selection of exercises for (say) the first year's work would, no doubt, have proved helpful.

Mathematics.

A First Dynamics. By C. S. Jackson and W. M. Roberts. viii + 404 + (Answers) 8 pp. (Dent.) 5*s*.—The modest title somewhat belies the character of this book, for although it begins at the beginning it includes some of the simpler cases of the motion of rigid bodies; the implied limitation has rather reference to the mathematical

equipment of the reader, which is assumed not to extend to a knowledge of the conic sections or calculus. The order of treatment is unusual. Books on this subject generally start by enunciating the Newtonian laws of motion. Now direct experimental proof of the truth of these laws is difficult, and writers content themselves with citing the agreement of their consequences with observed facts as the best proof of their validity. This, however, carries no conviction to the beginner, and the laws are to him little more than imperfectly understood articles of faith. The present writers have, we think, adopted a better way. By a series of well-devised and easily performed experiments they lead up to the establishment of the relation between work and energy, and from this deduce the relations between force and motion. This is a thoroughly scientific method of procedure, and the student who follows it cannot fail to gain a firm grasp of the fundamental dynamical principles. He is then in a position to follow intelligently the discussion of Newton's laws and the notion of mass, and to avoid that confusion between weight and inertia into which beginners are so prone to fall. In this, as in other respects, the book is most admirable. Most of the problems discussed are matters of practical importance in everyday life, and are sure to hold the attention and stimulate the interest of the reader. This is a work we can thoroughly recommend.

Concurrent Practical and Theoretical Geometry. By W. J. Potter. Parts I. and II. viii+437 pp. (Ralph Holland and Co.) 3*s.* net.—This is another of the works the production of which has been stimulated by the prevailing unrest in connection with the teaching of geometry. The two parts before us contain the substance of the first four books of Euclid, and the order of treatment is that now generally adopted, except that all theorems on areas are placed after those relating to the properties of the circle. Each proposition is preceded and followed by practical exercises intended to lead up to and to illustrate the theorem demonstrated. In addition there are sets of theoretical exercises; but the large number of practical exercises is what gives the book its distinctive character. We are inclined to think that there is at the present day danger of too much time being devoted to work with the ruler and compasses. It no doubt helps the growth of the geometrical sense when it is but feebly developed, but after a certain stage is reached it ceases to be of much value. However, a work of this description will generally be used under the guidance of a teacher who will make a judicious selection from the wealth of material provided, and under these conditions we believe it will be found a very satisfactory text-book for school use.

Science and Technology.

The Elementary Theory of Direct Current Dynamo Electric Machinery. By C. E. Ashford and E. W. E. Kempson. 120 pp. (Cambridge University Press.) 3*s.* net.—We are accustomed to see elementary text-books on dynamo electric machines which give very brief theoretical treatment and devote many chapters to a full description of the mechanical details of different types of machines. This often misleads a young student, who, after reading such a book, assumes that a minimum amount of theoretical knowledge is sufficient and that the mechanical construction of the machines is the more important item for his consideration. It is satisfactory to find, at last, a small text-book which treats the subject in an entirely different manner. The authors believe that in the training of an electrical engineer there should be included a knowledge of the theory of the subject built up logically from first principles; and the volume is an excellent example of what an introductory course to the subject should be. The subject-matter includes the relations between electric currents and magnetic fields, the essential parts of dynamo electric machines, energy losses and efficiency, types of armatures, characteristics, the production and measurement of a magnetic field, and armature reactions.

Electricity, Sound, and Light. By R. A. Millikan and J. Mills. 389 pp. (Ginn.) 8*s.* 6*d.*—In this volume the authors present the course of instruction given to junior students of physics in the University of Chicago. It is assumed that the student has already had a preliminary course in general physics, including heat. The method of treatment is analytical rather than descriptive, although no mathematical knowledge beyond trigonometry is presupposed. An attractive feature of the book is the experiments, of which one is given at the end of each chapter. The experiments are of an advanced quantitative nature and are described in complete detail; also it is interesting to notice that the subject of potential is introduced in the first chapter by a clear statement of gravitational potential. For the most part the curvature method is adopted for explaining the fundamental phenomena of light. The volume concludes with an excellent chapter on radio-activity, followed by a good selection of problems (without answers) and numerous tables of physical constants. On p. 193 the surname La Place should be Laplace.

Workshop Science. By R. J. Brown. 176 pp. (Arnold.) 1*s.* 6*d.*—Teachers will find this to be useful in evening continuation schools and in junior classes in technical schools. The subjects included are mechanics, pressure in liquids and in gases, and heat. Theoretical and practical exercises are given at the end of each chapter. The author should take the earliest opportunity to modify the paragraph on force in chapter i., where gravity, heat, cohesion, and chemical action are quoted as examples of force. The expression $\frac{1}{3}\pi r^2 h$, at line 17, p. 22, should read $\frac{1}{3}\pi r^2 h$.

The Theory of Valency. By Dr. J. Newton Friend. 180 pp. (Longmans.) 5*s.*—This volume is a recent addition to the series of text-books of physical chemistry in course of publication under the editorship of Sir William Ramsay. It fills a real gap in chemical literature, for hitherto no treatise on the subject has appeared, at all events in the English language. In introductory chapters early theories of chemical combination are traced up to the time when Frankland's classical paper on the organo-metallic compounds may be said first to have suggested definitely the conception of valency. The author then deals briefly with the periodic classification and its relation to valency, and next proceeds to a consideration of the valency of the elements group by group. In consideration of the supreme importance of valency in organic chemistry, the first chapters are devoted to carbon. Finally, the various theories of valency, its nature and physical causes, are discussed, the recent suggestions of Barlow and Pope and Ramsay being included. This volume may be recommended to the teacher of chemistry who wishes to keep abreast with recent developments of the subject.

Organic Chemistry for Schools and Technical Institutes. By A. E. Dunstan. viii+160 pp. (Methuen.) 2*s.* 6*d.*—An introductory handbook suitable for students of about the standard of the London Inter. B.Sc. The earlier part of this course is arranged largely on a practical basis, the practical work being introduced not merely as an occasional adjunct, but as an essential element. The earlier pages

deal practically with the purification and characterisation of ethyl alcohol; the action on alcohol of acids, mineral and organic; and the products of the ultimate reduction and of the oxidation, partial and complete, of alcohol. To a practical framework such as this is added the necessary theory, with descriptions of similar compounds. In the more advanced part of the book practical work is omitted almost entirely, perhaps because it is unsuitable for beginners. Unfortunately, these more advanced sections suffer from undue compression and lack of proportion. Thus in an elementary text-book, the carbohydrates should hardly occupy nine times the space devoted to the ketones; nor should compounds like benzaldehyde and benzyl chloride be treated at length while the whole account of benzene, its structure and homologues, is compressed into one page. For these reasons the book, though well worth the attention of teachers of the subject, cannot be recommended unreservedly as a text-book for junior students.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

The Use of Weather Maps.

THE article on Weather Maps, by Mr. E. Gold, in the July issue of THE SCHOOL WORLD, will be appreciated by teachers who have wished to supplement the meagre information on this subject provided in the usual text-books of geography. The period generally allotted to geography in the school time-table is so short that the teacher may find it difficult to devote a sufficient portion of the lesson to the principles of meteorology.

The plan which I have adopted to overcome this difficulty has proved successful, and may possibly be of interest to other teachers. Each morning, on receipt of the M.O. chart, I devote a short time to the preparation of a few notes on the day's weather, pointing out the type of isobars represented and the corresponding indications in the sky. These notes are then posted on a notice board, together with the pupils' observations of the various weather elements, the M.O. chart, and the *Times* weather report, the last provided by an old boy. The main idea is to interest the pupils, and induce some of them to take up the subject as a hobby. Among recent instances of weather types we have noted the brilliant sky followed by Noah's Ark cloud and falling barometer of the wedges of March 27th and 31st, 1909, the unsettled weather of the col of May 28th, and the cyclonic weather of the small local V-shaped depressions of May 14th and 18th. The hard sky associated with straight-line isobars was very noticeable on April 1st, when, too, the saying "Short notice, soon past," was for once disproved, for the remarkably rapid rise of pressure as the Icelandic high-pressure approached us was followed by a rainless period of ten days throughout England. The well-known European cold spell of May was observed on May 14th to 16th, and the backing sequence of winds which occurs when a cyclone centre passes to the south of an observer was noticed on May 17th. The M.O. chart of May 26th showed clearly that thunderstorms are often associated with secondaries.

A good example of the failure of the halo prognostic occurred on April 2nd. The six p.m. M.O. forecast of April 3rd promised rain for all districts, but only 0·01 inch of rain was recorded for April 4th, and that at only one station. This instance of the failure of the M.O. forecast is the more curious because Abercromby, in "Weather" (p. 443), gives as an instance of a successful forecast one based on what appears to be an exactly similar distribution of isobars. Perhaps Mr. Gold will have an opportunity to explain why, within the last few days, two cyclones have followed each other along Path III., which he states is very rarely used in summer.

I found my pupils much interested in comparing a German weather-chart with an M.O. chart for the same date. It served to bring out the relation between millimetres and inches, and also that between Centigrade and Fahrenheit scales of temperature. The "Face of Nature," by the Rev. C. T. Ovenden (Murray), contains a brightly written chapter on weather forecasting, and other small books which may prove suggestive to teachers are "Observing and Forecasting the Weather," by D. W. Horner (Witherby), and "Some Facts about the Weather," by W. Marriott.

W. MACLEAN CAREY.

Rutlish Secondary School, Merton, July 13th.

An Interpretation of the Odes of Horace.

I AM obliged by the terms of your review of my books on Horace in your April issue, and also by the fact that, though short, it is not perfunctory. The disadvantage of combating what I conceive to be errors in interpretation is that one has to harp too much on a single string. I do not deny Horace his wit and even playfulness, but much that we think merely playful is, as I believe Ovid says ("Tristia," Book II.), "mordax" and composed "venenato ioco." I hope to show this in my next book. The question of Horace's "monomania" depends upon the settlement of the greater question whether what we have taken to be his subject, or subjects, is really his subject. Our views have not advanced since the days of unauthoritative scholiasts and later schoolmen to the extent that our present armament of criticism requires. Sellar sees that the Odes *are* a collective whole, but there he stops. We have never read them so; consequently a unifying process offends us; but "In Memoriam" might, if it were some centuries old, be read disconnectedly, and the advocate of the true method of interpretation would be open to the same charge as your reviewer brings against me. It is natural to think that Horace was moved to expression by events that happened to his nearest friends, and it is natural to find Persius and Juvenal understanding him thoroughly, and not regarding him as the strange mixture of inconsistencies which modern comment would make of him. I know that explaining a poem is almost as fatal to it as explaining a joke, and I have tried to warn readers against allowing the suggestion of the source of an allusion to spoil the poetry. Horace's work no less than Tennyson's must be read subject to the principle that "the thought within the image is much more than any one interpretation," notwithstanding that a given interpretation may indicate the prime source of thought and expression. One cannot, however, be always repeating this, and consequently one seems to have a King Charles's head.

On that passage in the journey to Brundisium, surely all the trend of modern opinion is that its appearance does not imply literal happening—the thing is an indraft of a coarse laughter-trap from Lucilius. At any rate, one great Augustan authority at Oxford so holds. My whole point is that the taste of propriety in expression was very different in those days—as in Shakespeare's—but that Horace was a conformer to the standard of conduct recognised as becoming by an emperor who was a really rigid moralist. Certainly no abandoned "moechus" or one not "purus et insons" would have been asked to write the "Carmen Saeculare." I think I shall be able in time to show that the "Inachian fury" of the Epodes is expressed

in symbolic terms which, however offensive, are yet imagery and not literalness.

I thank you for recommending the study of these questions, towards answering which I have tried to help a little, since I think that their discussion will light up much that is dark in some very important years of early imperialism. E. R. Garnsey.

Sydney, N.S.W.

Swedish Gymnastics for Boys' Secondary Schools.

It is more than a quarter of a century since Mme. Osterberg introduced the Ling system into England. At the present day there are few girls' schools of standing which have not a well-educated, qualified gymnastic mistress on the staff.

The idea that the Ling system was better suited to women and girls than to boys and men (if such an idea ever existed) has been dispelled by its introduction as the basis of physical training in both the Services, the Royal Navy first adopting it in 1902. And readers of the article on this subject in the June issue of The School World (p. 211) will note that the Ling system is recommended for *all* schools by the National League for Physical Education and Improvement.

The problem which has confronted at least one headmaster of my acquaintance is that of obtaining a suitable instructor for boys in secondary schools. Recommendation (6), "The studies of the gymnastic specialist should embrace anatomy, physiology, hygiene, mechanics, and pedagogics," will preclude the majority of drill sergeants teaching at present. Eton, Osborne, and Dartmouth have specially trained naval officers in charge of this important subject. But very many schools cannot afford to induce men of this calibre to join their staff. Moreover, the supply is necessarily limited. America, which is ahead of England in its adoption of the Ling method, and Sweden, its home, have a supply of specially trained teachers; but discipline, an absolute essential in gymnastics, is proverbially weak in foreign teachers of English boys.

Assuming from the above considerations that there is an inadequate supply of men teachers of the Ling system in England, it would seem that to introduce it *to all schools*, and more particularly to boys' secondary schools, the example of Mme. Osterberg might with advantage be modified. It is perhaps generally known that she began in 1881 with 1,000 board-school teachers with one month's training. Recommendation (6), quoted above, will show that it is essential to have well-educated teachers. My object is to direct attention to a six weeks' summer holiday course which already exists. Other similar courses may, and I hope will, be revealed in subsequent correspondence.

For the last three years Messrs. Grenfell and Coote, both late R.N., have held a six weeks' holiday course for university men and others teaching chiefly in preparatory schools, attended also by one or two secondary-school masters. The poor support they have received has made this a real sacrifice to their devotion to the Ling system, which they studied first-hand at the Central Institute, Stockholm.

As a member of Lieut. Coote's small class last year I obtained help of great value, and a short account of the work may be of interest to your readers. It has been their custom to hold the course at various watering places—last year at the Swedish Gymnasium of the Bournemouth Girls' High School. This fact is in itself significant that Swedish work for English boys and men is in its infancy.

The mornings, from 9 a.m. to 1.15 p.m., were given up partly to lectures on physiology, special stress, of course, being laid on bone formation, the character and functions of the more important muscles and the effect of exercises on them. No previous knowledge is assumed; but a great deal of information was packed into these lectures by Mr. Coote, who is an enthusiastic and able lecturer with a complete knowledge of his subject. They were illustrated by a skeleton and some dissection. After a short interval an hour's practical gymnastic lesson was given to the members of the class. The progression of the exercises was rapid, and many exercises were introduced into England for the first time from Sweden. Afterwards the lesson was discussed in detail with the class. Then followed lessons on swimming and gymnastic games. Lectures were also given on Swedish exercises, their effect, and the teaching of them, with particular reference to making up lesson programmes. A valuable part of the training consisted of criticism lessons.

This necessarily brief sketch of the course may strike many readers as very formidable; and, indeed, to get the full value of the course, it should be taken more than once, and most of us last year had had some previous knowledge of the subject. From the original article in The School World and from what I have tried to show it will be evident that the success of physical education in secondary and intermediate schools depends upon the right class of men taking up this fascinating work. It cannot be done by rule of thumb. I have assumed an acquaintance with the main features of the Ling system, an account of which appeared, *inter alia*, in Dr. Shrubsall's article on "Physical Education" in the *Teachers' Guild Quarterly*, December, 1908. C. F. Spencer Smith.

Sidcot School, Somerset.

Certain Queries.

I think it would be well if some of your readers would discuss the question of the to-all-intents-and-purposes compulsory Scripture paper in the Oxford and Cambridge Locals. In my opinion the times are now sufficiently enlightened for the scholastic profession to be able to make a successful attack on a procedure which must tend to degrade Scripture in the eyes of our youth. Whether I am right or not there is certainly room for discussion.

While I am writing this I should like to have the opinions of your readers on the two problems set in the recent London Matriculation chemistry paper. Is it reasonable to expect students taught on modern lines to know the formulæ for sodium acetate and oxalic acid? If it is, I should be glad to know how the examiners would proceed to impart the information to pupils of sixteen in an ordinary school course of chemistry. Headmaster.

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THE TEACHING OF IMPERIALISM IN THE EMPIRE'S SCHOOLS.

By B. C. WALLIS, B.Sc., F.C.P.

"THE component parts of the British Empire are so remote and so different from one another, that it is evident that the Empire can only be held together by sympathy and understanding, based on widely diffused knowledge of its geography, history, resources, climates, and races. It is obvious that if this knowledge is to be effective it must be imparted to the coming generation. In other words, it must be taught in the schools of the Empire." This sentiment strikes the dominant note of the work of the Visual Instruction Committee of the Colonial Office, which has been engaged since the autumn of 1902 in making preparations to carry this ideal into practice.

The traditional man in the street has some knowledge of the component parts of the Empire from various sources: perchance he knows of Canada, because he has friends or relatives who have immigrated there; of Australasia as a source of supply of frozen mutton or a cricket team which pays periodical visits to England; of Africa, since he has hardly had time to forget the Boer War; but he has little chance of reaching the true sympathetic outlook upon Imperial affairs which can only come after he has attained the systematised and comprehensive knowledge outlined in the paragraph just quoted. Occasionally, his newspaper will provide him with a moment's insight into the nature of the work of Empire.

He may further have the good fortune to come across in his reading, for the man in the street reads sometimes, passages of similar tenor to those in Sir Donald Mackenzie Wallace's "Web of Empire."

From chance reading such as this, the adult Englishman gains his knowledge of the high ideals which permeate the administration of the Empire; he may be fortunate to grasp this spirit, or he may remain without knowledge of the self-reliance and self-abnegation which the service of the King-Emperor means in both the large and the small Dominions overseas. But such knowledge must not be left to chance. The responsibility of citizenship demands that such knowledge and the sympathy which inevitably follows therefrom should be part and parcel of the equipment for life not only of the Briton at home but of the Briton, wherever he may live; of the white man, and equally of the brown and the black. Unity and peaceful orderly progress can come no other way: and, while, on the one hand, much may be done to stimulate the adult mind in this direction, the real steady development of such knowledge in the minds of the coming generation is the best security for the upkeep of an Empire which means so much for the peace and good government of the whole world. How can the children be reached? How can these high ideals become inherent in the life-web of Britons of all castes and classes? Surely, only by consistent slow development through the years of school life. This, then, is the task set itself by the Visual Instruction Committee.

The committee began its work by the selection and publication of a set of slides and a course of lectures designed to illustrate life in the United Kingdom. This was done at the expense of the three Eastern Colonies of Ceylon, the Straits Settlements, and Hong Kong; and the work has been extended as a result of the collection of a sum of £4,000 by a committee of ladies under the leadership of Lady Dudley, and under the patronage of H.R.H. the Princess of Wales. The result, up to the present, is that in ten British colonies and in nine provinces of India lectures illustrated by these slides are being given in the schools in order to familiarise the children with the characteristics of the Motherland. It will be convenient to consider in some detail the lectures which have been prepared for use in India, lectures which, it is suggested, would be "stimulating to the children of the United Kingdom to have presented to them as an account of their own land as seen from the point of view of children in another part of the Empire. The effort on the part of English children to imagine themselves in the position of Indian children should tend to arouse and impress a valuable feeling of political sympathy"; and it is just such a feeling of political sympathy and solidarity on which the unity of the Empire depends.

The lectures are as follows: (1) the voyage from India to London (59 slides); (2) London, the Imperial City (59 slides); (3) the scenery of the United Kingdom (53 slides); (4) historic centres and their influence upon national life (44 slides); (5) country life and the smaller towns (61 slides); (6) the great towns, their industries and commerce (47 slides); (7) the defences of the Empire (54 slides).

It is suggested that these lectures should not be given each as a whole at one time, but that a few slides should be taken and described in each lesson, so that the whole set of 377 slides would form a course of descriptive geography of an invigorating type. The first lecture describes briefly India, and the voyage; with calls at Colombo, Aden, Malta, Gibraltar; and with side excursions into various realms, for example, into the progress of shipping, into the conditions of life in Egypt, and into the approach to London *via* Dover and Gravesend. The geographical aspect of the Empire is not forgotten, as the tropical forests of Ceylon are contrasted with the arid conditions at Aden and in Egypt. The work of Empire-building is exemplified by slides showing the Assouan Dam and its results upon life in Egypt. The keynote that the United Kingdom is a cold country where people need fires and chimneys is struck admirably by two coloured slides showing sunset effects on the Thames as seen from a hill near Gravesend. The smoke from thousands of chimneys produces the clouds which help materially to the beauty of the pictures.

In connection with the second lecture, London as the seat of Government is shown by slides of the Government buildings and the Houses of Parliament, &c. The national monuments, such as St. Paul's and the British Museum, the conditions of life in the crowded metropolis, and the radiation of railway lines from London receive due treatment.

The slides in connection with lecture 3 present an excellent picture of the Homeland: lowland is contrasted with upland and with mountain, river valleys and the sea-coast are compared, and through all these pictures occurs the characteristic vegetation of our land. Pine woods, poplars beside a brook, cattle bathing their feet in the Wye, the nakedness of Connemara, and picturesque views of natural curiosities such as Fingal's Cave all combine to make the picture true and vivid. Rural England is brought home to the child in all its beauty of hedgerow and landscape.

The historic story of the growth of the nation is told in reference to monuments such as Stonehenge, and the great Cathedrals, castles such as those of Windsor and Stirling, famous towns such as Stratford-on-Avon and the university towns of Oxford and Cambridge. The lesson to be learnt from English games is not forgotten, as slides are shown of football and cricket matches in addition to those of other sports; and the following quotation from lecture 4 on the slides showing the hurdles and the half-mile at the inter-university sports will show the spirit dominating the section. "There are many other athletic contests in which strength and skill are matched. Here, for instance, is a race between representatives of the Universities of Oxford and Cambridge. Even in this contest, where one man only can win, the English do not say simply that he won the race, but they say that he won it for Oxford or Cambridge, as the case may be. Part of the glory is not his; it belongs to the university which trained him. Here is the finish of another race."

Lecture 5 deals with country life: there are pictures of markets, of country houses, of farm workers, of cattle and sheep, of English fruits and flowers, and, in conclusion, of winter sports, ending with a picture of the Thames frozen over.

The industries of the country are dealt with in the next lecture: they are tin-making, coal-mining, rope-making, the manufacture of textiles and pottery, and the working of iron (including the launching of an ironclad and the boring of a large gun). Railways are shown, and finally local government receives a due share of attention in connection with pictures of a hospital, a school, a public park, and the Municipal Buildings of Glasgow. This is lecture 6, and the seventh and last lecture deals with battleships, with types of the Army, with coaling stations, and ends with a picture of the "Emperor-King in naval uniform" and a picture of the flag of the British Empire.

This brief outline of the lectures and slides upon the United Kingdom will show the thoroughness with which the subject is treated and will justify the suggestion that the usefulness of the work is not limited to the colonies and dependencies. The slides themselves have been specially selected and in some cases cannot be obtained except in this series, so that the net result has been to produce a series of pictures of the United Kingdom which is thoroughly up-to-date and representative of the best that is possible in the way of geographical illustration at the present time. If a guarantee of excellence be necessary, it will suffice to say that the selection of slides and the lectures are the work of Mr. H. J. Mackinder and that the technical work on the slides is done by Messrs. Newton. There can be no doubt that many teachers of geography to lower forms and in elementary schools would find these lectures and slides a great help in their work. Whenever the bias in the geographical syllabus is towards descriptive geography then these slides will provide a connected narrative which cannot do other than stimulate the children to an adequate appreciation of the scenery and physical features of the Homeland.

This work on the United Kingdom has been proceeding since 1905 and recently material has been collected for its extension. In June last the Princess of Wales was present at the Caxton Hall, Westminster, when Mr. Mackinder lectured upon the work of the Visual Instruction Committee, and after explaining the earlier development of the scheme went on to say that an artist, Mr. Hugh Fisher, had been travelling many thou-

sands of miles collecting slides for the work: he had been in India, at Singapore, and in Canada; a complete set of pictures of the tropical zone was in process of preparation. Mr. Mackinder showed some of these pictures and gave an outline of the eight lectures into which the proposed course on India is to be divided. It will be noted at once that in the case of the colonies the pictures will be quite new, and further will be definitely related to the purpose of the lecture scheme. It has been the privilege of the writer to see many of the first specimens of these slides, and he was struck by the great pertinence they bear to the main purport of the scheme. Some of the slides are in colour and these are especially beautiful. Others are notable for their naturalness: there is little or nothing of the weirdness and the bizarre effect sometimes seen in slides of foreign lands, especially in slides relating to the tropical countries. The lectures on India are entitled provisionally Madras, Burma, Bengal, the United Provinces, Bombay, Rajputana, Delhi, and the North-west Frontier; and thus are representative of the whole dependency.

Whereas teachers can frequently make their own slides in illustration of lessons on the United Kingdom, they are unable to do this for other lands and consequently are bound to welcome such a set of pictures as this. Anyone who has waded through lists of slides in order to find a definite set to illustrate his teaching, and then found, in fine, that the set he has selected is inadequate because the photographer has not taken the picture in such a way as fits the purpose with which he wishes to show the picture to his class, will welcome work of this kind, where the same artist has taken all the views and has kept in mind throughout that the children are to be provided with a set of pictures which will represent naturally and faithfully the reality of life in other lands.

The photographer has not been led away from his main object by a desire to show merely the picturesque or the curious. One illustration of this fact will suffice: in many slides which show pictures of snake-charmers the effect is that of a bizarre showman, but Mr. Fisher has one slide showing a bazaar in one of the smaller towns, and in the foreground is a snake-charmer who is excellently shown in a natural pose and in relation to natural surroundings.

One other point in this connection is important: the writer once showed, in connection with a lesson on India, a picture of a tiger, and the children manifested disappointment on recognising that the photograph was taken at the Zoological Gardens. The picture lost its value at once; Mr. Fisher's pictures cannot suffer in this way. Again, slides of workers in India usually lose by their lack of environment: the natives are seen at work, but not in relation to their surroundings; and here again Mr. Fisher's slides show the complete picture. As will be obvious, slides of this nature are extremely valuable, and it is to be hoped that the education authorities will not delay in placing orders for sets as soon as they are ready. Apart from the special purpose for which this work has been done, it is clear that work of this character will form an important contribution to the geographical apparatus with which schools should be equipped. There can be no doubt that the coming generation, trained to appreciation of imperial conditions and problems in ways of this kind, will be more fitted to perform its share in the government of the Empire, which will inevitably fall more and more closely upon the shoulders of the people.

A well-informed people means a well-balanced public opinion, and a well-balanced public opinion means a well-governed and progressive Empire. It might, indeed, be wise if attendance at courses of lectures of this type were compulsory for the adult population. We can but echo the sentiments expressed by Lord Grey, Governor-General of Canada, who telegraphed to the chairman of the Caxton Hall meeting: "Success attend your efforts organised lantern lectures in Dominions."

A SCHOOL DEBATING SOCIETY.

By LIONEL M. JONES, B.Sc., A.R.C.Sc.
Headmaster of the Municipal Secondary School, Birmingham.

MOST schoolmasters are fully aware of the value to a school and its pupils of the ordinary organised school games. They know how these sports assist in promoting that indefinable sense of unity and patriotism known as *esprit de corps*—so characteristic a feature of English public-school life. They know how games teach boys to be zealous and how to be keen; how they train the boys to sink their own personality and own desires in something greater than themselves, and thus initiate the foundations of citizenship. Masters know also how games encourage endurance and fortitude, respect for an opponent, unselfishness, and self-control. There is no lack of appreciation among teachers of all these beneficial effects resulting from organised games, and, indeed, it would be hard to overestimate them.

Nevertheless, every schoolmaster knows that, great as is the influence of games, there are many boys who never come within their sphere; boys who find no enjoyment in cricket, football, or hockey; boys who, when they do play, exhibit an almost hopeless ineptitude for games, and derive little or no benefit from them. Yet many such boys have wide interests; they are neither dunces nor boys whose sole idea is to be top of a form or to pass a certain examination. Many non-athletic boys are quite willing to devote time and energy to the good of their school; they feel an affection for it quite equal to that of the keenest bowler or best three-quarter back in the team; and they are, indeed, quite as deserving as these of the respect of their fellows.

The only thing necessary for the non-athletic boys is some suitable sphere of action in which

they can exhibit their activity—some school society in which they can take part and assist in developing. Yet in many schools little effort is made to find congenial spheres of activity for these boys, or to provide school societies where they can be of use. These particular boys are not encouraged to devote their energy or their talents to the good of their fellows or to the happiness and welfare of the school. Thus they are allowed to pass through their school and to leave it unrecognised and misunderstood, with their social instincts undeveloped and their abilities not adequately utilised.

Similar considerations apply to the masters in a school. Every master should be encouraged to exercise his intellectual ability and to impress upon his boys the force of his own individuality. Boys have a great admiration and respect for any special ability and for any special knowledge. The influence exerted by a master outside the class-room may be, and often is, more valuable than that wielded in school; yet, often, no encouragement is given to him to benefit his boys in any way out of the ordinary; no scope is afforded to other than athletic prowess. Especially is this likely to be the case with a young, highly intellectual, and somewhat diffident master in a large day school. He may be intensely earnest and zealous, keenly desirous of doing his best for his boys, of stimulating them and of leading them to higher intellectual levels. But all chance is denied him; in the class-room his whole energy may be consumed in fortifying himself against the forces of laziness, slackness, and apathy. Difficulties of discipline almost overcome his powers and stultify his teaching. If, however, he is provided with a field for spreading his enthusiasm, for infusing his zeal and his intellectual force, he becomes as useful and effective as the double Blue, who, after the first few half-holidays, has little difficulty in discipline and becomes recognised as an efficient teacher.

To attract and to interest the class of boys and masters we have described in the corporate life of the school is a matter of importance, and the means of doing it are afforded by a large number of school societies and movements other than those which are purely athletic. Among these institutions, for example, are natural history societies, literary and debating societies, chess clubs, school magazines, school plays, and so on. All these societies tend to increase the unity of school life, to unite boys of different forms, to bring together boys and masters, and assist each better to know and to appreciate the other.

In the present article it is proposed to deal with a school literary and debating society. It only attempts to detail the experience of the writer in his own school, an experience, it may be said, which has led him to consider such a society a valuable adjunct to a school. A debating society appeals to a large number of boys; it is easy to start and to keep flourishing; it affords to many boys an early training in readiness and fluency in speech and in powers of expression, which are of great advantage to them in later years. It further affords many opportunities for clearer insight into the boys' characters, aims, and thoughts; it assists masters in encouraging boys in special lines of thought and subjects of interest, and may bring into the school life and activity many boys who otherwise would be isolated and unimpressed by the social atmosphere of the school.

When the Literary and Debating Society was first instituted, advantage was taken of the custom of setting a holiday task during the summer vacation. In the two highest Forms this holiday task was the preparation of a paper suitable for delivering to the society. The choice of subject was left entirely to the boy, but had to be approved of by the headmaster. After this, assistance could be received from any master, and many masters were called upon to offer advice and guidance for reading up the various and diverse subjects selected by the boys. Engineering subjects were great favourites. For example, "The Severn Tunnel," "Submarines," "A Day in a Locomotive Shed," "A Travelling Post Office," "Bridges," "Richard Trevithick," "George Stephenson," "Aerial Navigation" were among subjects selected, and the engineering master was consulted often before the final reading of such papers. The history master, too, found the society afforded him many opportunities of directing the reading of boys, as papers on historical subjects were frequently given; *e.g.*, "The Indian Mutiny," "The Crimean War," "The Boer War," "Mediæval Customs and Costumes," "Punishments of the Past," and numerous biographical papers. Other masters also had occasional opportunities for obtaining valuable glimpses into the thoughts, interests, and hobbies of their pupils. When the custom of setting a holiday task was discontinued, this method of getting the papers prepared was continued.

The papers were often illustrated by lantern-slides, especially copies of plates, diagrams, and pictures, from some of the works of reference consulted. The school copying camera and dark room were available for this purpose, and photographic plates and chemicals were, with certain restrictions, provided by the school. The lantern-slides subsequently became school property.

The headmaster generally presided over the meetings, and at the first meeting a secretary and committee were appointed. The duties of the latter were so light, however, that later only a secretary was elected. A committee is, nevertheless, of much use if the society shows signs of flagging, since the members can assist the secretary to arouse interest in the meetings, and will feel it a duty to take part in the debates. Much of the success of any society depends on the energy and tact of its secretary, and this is especially the case with a debating society. Fortunately, boys can generally be trusted to elect for such a position the boy best suited to it.

For each paper a critic was appointed, to whom

the paper was given a few days before it was read to the society. His was the duty of opening the discussion and criticising the paper. This course has many advantages; it necessitates greater care on the part of the essayist, and makes him more accurate in his statements of fact and less slipshod in his English. Matter and style were both found to improve when definitely appointed critics followed the reader. It had the effect, further, of increasing the debate on the paper, as it opened up topics and directed attention to points suitable for discussion, as on many points of the paper the critic and essayist certainly differed. When no formal critic was appointed, the discussion on the paper was found to degenerate into a number of questions asked of the essayist. These questions were valuable in giving the reader practice in replying and speaking with little notice, and the knowledge that he would certainly be assailed with numerous questions caused him thoroughly to get up his subject; but they did not afford practice in speaking to the members of the society as a whole.

About one meeting in every three took the form of a debate. For these debates a proposer and seconder on each side were appointed beforehand, and were allowed ten and five minutes respectively. After their speeches the debate was thrown open. All the usual rules governing debates and discussions were rigorously adhered to in order that the boys should learn something of the mode of conducting a public meeting. The subjects chosen for discussion were such as to interest boys, and full advantage was taken of any burning questions of the day; but subjects of party politics were not allowed. The debates seldom flagged, and more frequently than otherwise it was necessary to adjourn the debate to a subsequent evening. The interest in these debates was so keen that for several years a junior debating society was also carried on by the younger boys, who felt some hesitancy about taking part in the discussions of their seniors.

At intervals a joint debate with some other secondary school in the district was held. Some fifteen or twenty upper form boys from one school would visit the other, and after suitable entertainment of the guests the debate would start. The opener on one side and the seconder on the other side were selected from one school, the other school providing the two other principal speakers. These joint debates invariably aroused a great deal of interest, and the quality of the speeches was good, as the speakers took more trouble in getting up their points beforehand, and evidently felt that they were to some extent representing their school and were custodians of its honour.

In the early debates the presence of a few masters was found materially to assist the discussion; they were useful in opening out points of discussion which might not readily be seen by boys unused to debate. The difficulty of getting boys to speak, which occurs at first, is also largely avoided by the selection of subjects in which they really take an interest and on which they do hold opinions. Debates always go well on subjects such as "Conscription," "Universal Military Training," "Professionalism in Sport," &c.

The danger also exists of boys being too ready to say something when they have nothing to say; for example, getting up, saying, "Mr. Chairman and gentlemen, I don't agree with the last speaker; I think his speech was all nonsense," and then sitting down. This fault, however, only needs a few remarks from the chairman, and can be easily stopped without discouraging those who have any real point to make, but do not wish to do more than bring it forward.

On some occasions variety was obtained by impromptu debates or speeches. The names of those willing to speak were placed in one box, and a list of subjects placed in another box; a paper was drawn from each box, and he to whom the lot fell had to speak for two minutes on the subject indicated. The chairman would in this case exercise discretion regarding the subject, which must be one on which a boy could be expected to say something. In the debates, four boys drawn by lot spoke in succession on the *same* subject, after which a vote was taken and the next subject started.

On other occasions five-minute papers were given; thus early in last autumn term six boys gave five-minute papers on "The School Camp." At these meetings a number of boys can be induced to write and read a paper who otherwise might not do so, and many make their start in the society in this way.

Many other methods of increasing the activity and utility of a school debating society will doubtless occur to all who start one. The writer is quite convinced of the usefulness of the society in his own school, not only on account of the reasons stated at the beginning of the article, but also because he believes the practice in speaking has been valuable to many of his boys. He has often observed at old boys' meetings how many of the boys who took an active and prominent part in the society are capable of speaking neatly and pithily in proposing a motion or responding to a toast, and he has little doubt that they owe much of this ability to the practice afforded them when at school.

ST. PAUL'S SCHOOL AND ITS NEW SCIENCE BUILDINGS.

THIRTY years ago the house of one of the masters at St. Paul's School was taken to give additional class-rooms, and the attic was converted into a chemical laboratory. In this room all the science teaching was done. When the school moved out to West Kensington, in 1884, two lecture theatres, a chemical laboratory, and a physical laboratory were provided.

It was the period of large rooms for science. The lecture theatre can find seats for the whole school, and the chemical laboratory is 75 ft.

long by 30 ft. broad, and could, under the regulations of the old Science and Art Department, find space for about ninety boys at one examination. Nowadays the tendency is in the direction of smaller rooms, except perhaps at the universities, where the conditions are very different from those which obtain at a school.

The chemical laboratory, which was fitted up mainly on the plan of the then new laboratory at Manchester Grammar School, has, with slight modifications introduced from time to time, been sufficient and efficient for the last twenty-five years. It continues to be so from a chemical point of view, but to the rest of the school, who, in certain winds, have strong evidence of the presence of a laboratory in the building, it is distasteful. In a chemical laboratory there is always a danger of fire, and if only for this reason it is not desirable that the laboratory should form a part of any considerable building.

FIG. 1.—The Exterior of the New Science Buildings at St. Paul's School—from the north-west.

At St. Paul's the accommodation for physics, a room 40 ft. by 40 ft. and 12 ft. high, is becoming inadequate to the increasing needs of the subject. The above, amongst other considerations, decided the governors of the school to erect new science buildings, which would commemorate worthily the fourth centenary of the foundation of the school. The preliminary work began about a year and a half ago, and the buildings are now practically finished and equipped. It is intended to transfer chemicals, apparatus, &c., from the present to the new laboratories during the summer holidays, so that work may begin in them at the commencement of the Michaelmas term.

The building has been happily designed by the architect (Mr. Dendy Watney) so as to harmonise with the style of the rest of the school, and both bricks and terra-cotta work are of the same colour. Large quantities of concrete have been used to secure a good foundation, and cement has taken the place of mortar. The floors and stairs are of the concrete-girder type, the main girders resting on vertical girders embedded in the walls. The girders are of steel, and there is no pillar in any of the rooms. The roof, which is tiled, is supported by six arched girders and by the end walls. In it are ten louvre windows to add to the lighting of the main chemical laboratory and for the store and fan rooms.

Special means have been adopted so as to obtain a good light in the building throughout, for in addition to the large expanse of windows the interior walls are all lined above the dado, which is brown, with white tiles. These give a clean and bright appearance to the rooms, and the effect should be permanent, as the tiles can, of course, be washed at any time.

The building is about 100 ft. long and 55 ft. deep, running from north to south. In the middle of the long side facing west is the entrance, and the hall is 14 ft. wide and the same height. The hall and stairs, 5 ft. wide, which are on the eastern side, are lighted by a large window rising from the half-way landing. The laboratories occupy two floors, and above are the fan and store rooms; there is also on the ground floor a store room for strong acids, &c., and on the floor above a central room which will be mainly used as a preparation room for the chemical laboratories near by. There is a lift to take chemicals and apparatus from the ground floor to the rooms above, and a spiral staircase leading from the preparation room to the fan and upper store rooms.

The physical rooms are on the ground floor and the chemical rooms are above them. There are three of each kind, and each room is fitted up so as to be a lecture-room, a class-room, and a laboratory combined. This arrangement economises space and gives considerable latitude to the teacher, enabling him to utilise the time at his disposal to the best advantage according to the part of the subject on which he may be engaged.

Taking the ground floor, on the north side is the main physical room. This is 50 ft. by 40 ft., and has a height of 14 ft. It is entered from the central hall through swing doors in the middle of its length. The western half of this room is fitted up for class and lecture work, and the eastern half contains the benches for practical work.

The lecture table, 14 ft. long and 2 ft. 6 in. broad, has a sink at one end, the ordinary gas-fittings, and plugs for the supply of electricity. The top of the table is 3 ft. 1 in. high from the floor, and the teacher is on a platform raised 3 in. Behind him is a blackboard, 6 ft. long and 4 ft. high, which slides in a frame attached to the south wall, and can be raised above the teacher's head, so that the boys may have a clear view of what has been placed thereon. The seat of the teacher has legs 3 in. longer than usual, and he is provided with a foot-rest under the lecture table. By this means he is raised, when sitting, 6 in. above the position he would occupy if sitting on an ordinary chair which rested on the floor.

Each boy has a separate desk, and these are of two sizes: the smaller ones are placed in the front rows and the larger ones behind. In classes which rarely exceed twenty boys, and then only by two or three at the most, it has not been found at all necessary to have rising tiers for the boys' seats.

Beyond the desks is a bench for balances. In the eastern half of the room are the working benches. These are 3 ft. 6 in. broad and 2 ft. 10 in. high. There are also half-benches along the three outer walls. They are fitted with gas-taps along the middle line, and have a sink with water supply at each end; there is also a groove to catch mercury near the edge of the bench. Underneath the bench, at a convenient height, there runs a foot-rest, which, with a stool used by a boy when making any prolonged experiment, is found to relieve the strain of the body and improve the steadiness in working. There is also under the bench a shelf on which rough pieces of apparatus may be kept. The more important instruments are housed in cupboards along the eastern half of the south wall; these are 7 ft. 6 in. high and 2 ft. deep, and contain adjustable shelves. The doors of the upper half are glazed. In all the rooms, both chemical and physical, cupboards of like dimensions are placed, made as long as the space would permit.

The framework of benches and lecture tables is of pitch pine and the tops are of teak, except that at one end of each lecture table there is a stone slab for heat experiments. There is a uniform height of 2 ft. 10 in. all through, and the space between the benches is about 4 ft. For the more delicate balances the bench is built of brickwork and the top is of slate.

There are swing doors glazed in their upper panels to all the rooms.

The south part of the ground floor is divided into two rooms. Each of these is 40 ft. long and 24 ft. 6 in. broad. The one to the south-west is for general purposes like the main room, but the one on the south-east will, in addition, be used for all experiments requiring a dark room. Its windows are fitted with dark blinds, and there are a number of plugs for electric light on the benches for special optical or galvanometer work. There is also a prepared space on the wall for lantern experiments. On the upper floor the main chemical room is above the main physical room, and is of like length and width; the ceiling is, however, arched, and the centre is more than 20 ft. from the floor. In the south-west quarter is the lecture table, containing the same appliances as those in the present school lecture theatre, but with the same arrangement as that recently erected in the new laboratories at Cambridge. In the wall behind is a fume cupboard, through which apparatus can be passed to or from the preparation room. There is a similar arrangement in the southern wall of the preparation room for the south-west chemical room.

FIG. 2.—View of the South-west Physics Room, with desks, lecture table, and blackboard.

In the north-west corner of the main room there is partitioned off for balances a glazed room, about 12 ft. by 10 ft. and 8 ft. high, and some little distance to the east there is a bench for furnace work.

The eastern half of the room is occupied by four working benches; these contain 128 lockers, which are of the type of those at Dulwich College. The sinks and water supply are on the plan of the new fittings at Cambridge. Above the benches are two shelves of glass for the reception of bottles containing reagents, so that the strong acids, &c., are kept well apart from the ordinary solutions.

The fume cupboards have been built on the outside of the windows of the east wall, and take

up no space in the room itself. There is a channel at the back of the cupboards to carry away any offensive liquid, or the water used in washing down the slabs, which slope downwards a trifle towards the channel.

In the middle of this room there is a vacant space, on which two additional benches may be placed should the number of boys increase. The drains in the floor are already in position, and, like the others throughout the rooms, can be opened out by raising a board in the floor. Meanwhile the space will probably be used for volumetric work, and ordinary tables will be used for the purpose.

In the south-east room, which is to be used largely for quantitative work, the lockers are larger than in the other two rooms, and along the southern and part of the eastern wall (besides the benches used for ordinary purposes) are benches for volumetric analysis and for accurate weighings.

The south-western room will be used mainly for elementary work. This room and the south-east room are 40 ft. long, 24 ft. 6 in. broad, and 15 ft. high.

The ventilation of the rooms is secured by a powerful electric fan of 4–5 horse-power, and there is a separate electric fan to remove the gases from the fume cupboards; the gases are thrown out above the centre part of the roof of the building. The rooms are heated by steam, and all the pipes are easy of access; there is electric light throughout. The builders are Messrs. Ashby and Horner, and the actual erection and fitting have taken about six months.

THE CONSTRUCTION AND READING OF WEATHER MAPS.[1]

By E. GOLD, M.A., F.R.Met.Soc.

III.

ALHOUGH anticyclones are irregular both in form and in motion, it is on the relative positions of these systems that the general type of the weather over the British Isles depends. One of the first to point this out was the Hon. R. Abercromby, whose book, "Seas and Skies in Many Latitudes," ought to be read by every schoolboy. He divides the weather distribution into four types:

(1) The southerly, in which an anticyclone lies east or south-east of Great Britain.

(2) The westerly, in which an anticyclone or anticyclonic belt lies to the south of Great Britain.

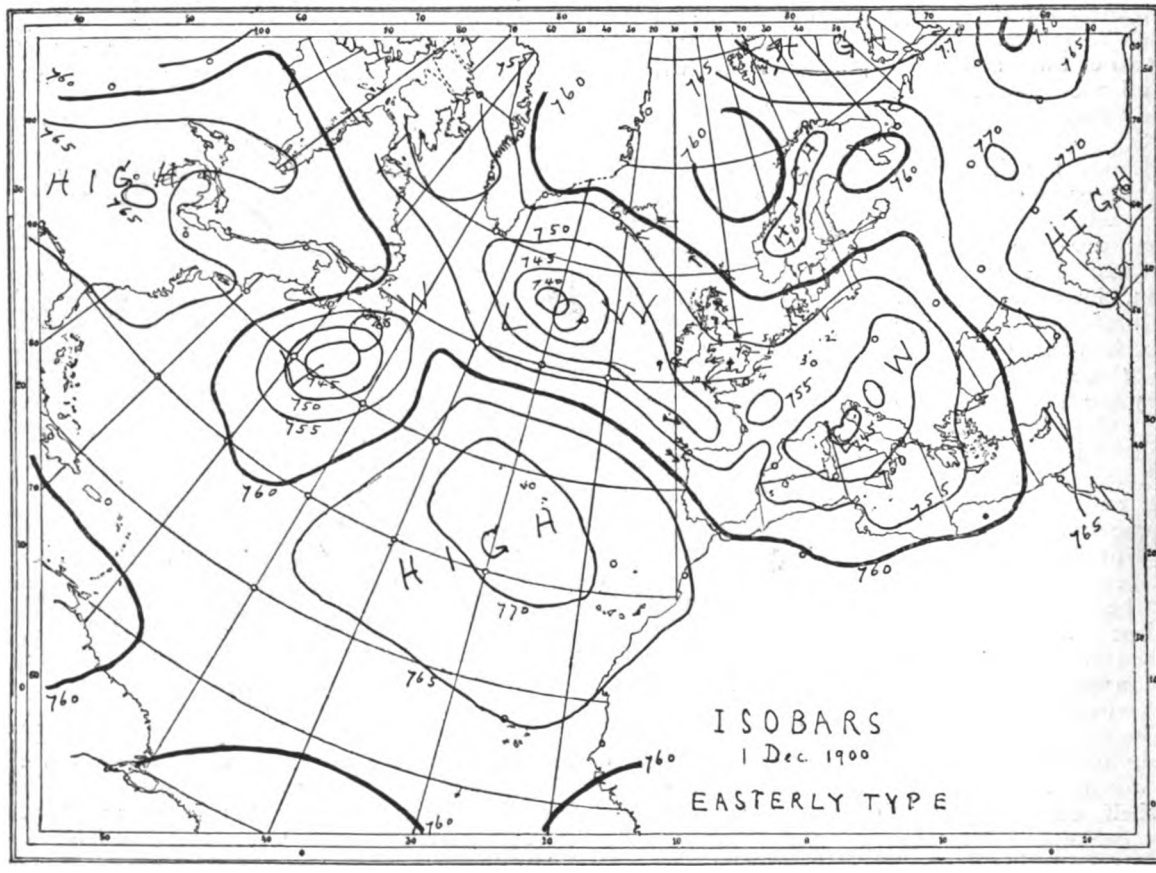


FIG. 11.

[1] The first and second articles appeared in the issues for July and August, 1909.

(3) The northerly, in which the northern Atlantic is covered by an anticyclone west of Great Britain.

(4) The easterly, in which an anticyclone extends over Scandinavia and the ocean north of Europe.

The accompanying diagrams, Figs. 11, 12, 13, 14,[1] represent the distribution of pressure over the north Atlantic and Europe corresponding to these four types. They are not chosen to represent the distributions corresponding most ideally to the definitions of the types, but to show the sequence of types as well as is possible in a small number of charts: they are all taken from the two months December, 1900, January, 1901.

Fig. 11 gives the chart for December 1st, 1900. The isobars over England run more or less east to west, and easterly winds and comparatively low temperatures prevail. The weather with such a type is usually black and bitter, and the variations arise from the fact that at times the Atlantic cyclone advances towards these islands and brings slight rain, while at other times the anticyclone moves southwards and brings clearer skies and colder weather. In the present case the two cyclones over the Atlantic combine, and the secondary high pressure region over Scandinavia disperses, while the Arctic anticyclone moves towards Siberia. The anticyclone covering the tropical north Atlantic moves north-east, and along its northern side cyclones break off, as it were, from the large primary, and move across Scotland, and the type of weather changes to westerly. This type persists during the whole of December, from the 4th onwards. Fig. 12 shows the distribution on December 12th, when a deep cyclone has its centre over Iceland, and strong west to south-west winds prevail over the British Isles. Sometimes the cyclones are further south and bring gales and rain; but the characteristic feature is that all move in an approximately E.N.E. direction, and each is followed by another, so that during the whole period the weather remains variable.

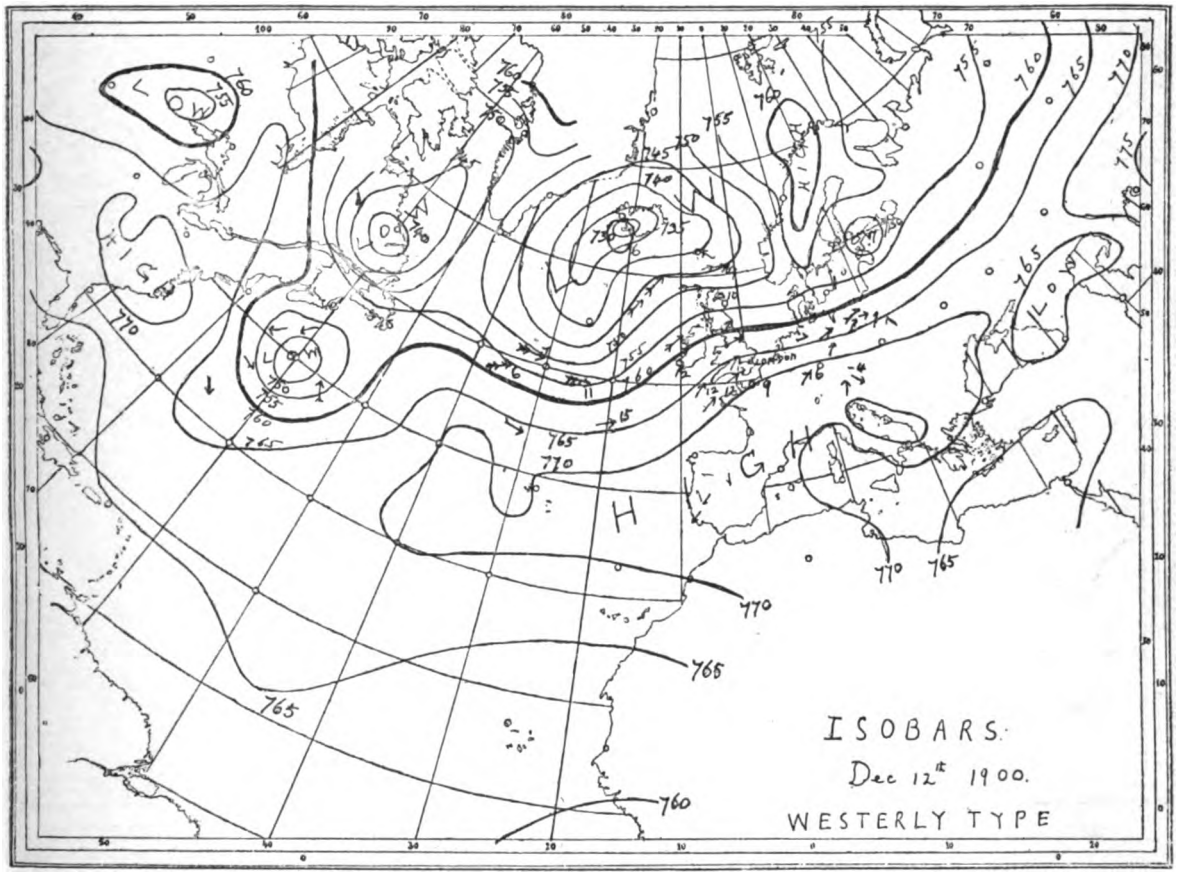


FIG. 12.

Towards the end of the month a ridge of high pressure extends across northern Europe, with a maximum over Scandinavia, and there is a kind of atmospheric conflict between westerly and easterly types. Eventually the Atlantic anticyclone moves south and the Continental anticyclone extends over central Europe, and a southerly type results. This persists from January 4th to January 20th. Fig. 13 gives the chart for January 16th. The whole of the north

[1] These charts are derived from the series of charts published by the Deutsche Seewarte and the Danish Meteorological Institute.

Atlantic is covered by an immense cyclone, so that Great Britain lies in a region of strong south winds. The barometer varies but little, and if a cyclone does advance towards these islands it is deflected to the north and disappears. There is little rain except in the west. On the 19th a deep cyclone appears over the west of Ireland and moves in an E.N.E. direction towards Denmark, and on the 20th a westerly type recurs, the region of low pressure gradually extending eastwards over Europe. The transition for England actually takes place very rapidly: it is caused apparently by the passage of the cyclone: really it is due to the advance of the Azores anticyclone to Spain, which deflects the warm west wind towards Europe instead of turning it southwards, to Africa and the north-east trades. The westerly type prevails for eight days with strong gales; on the 27th a deep cyclone passes east across the north of Scotland, and with it the whole northern Atlantic low pressure region moves over Europe. The anticyclone extends northwards, and a northerly type of weather ensues. Fig. 14 gives the chart for January 30th. Pressure is very high, 780 mm., south of Greenland, and low over the Baltic. The gradient of pressure is steep over Scotland, and consequently there are northerly gales.

Cyclones formed during the prevalence of this type usually move rather irregularly in a southerly direction, and are accompanied by falls of snow or sleet, while the temperature is always low for the time of the year.

GUILBERT'S RULES.

M. Guilbert, who made the most successful forecasts in an international competition at Liège in 1905, uses the following empirical rules as aids in forecasting:

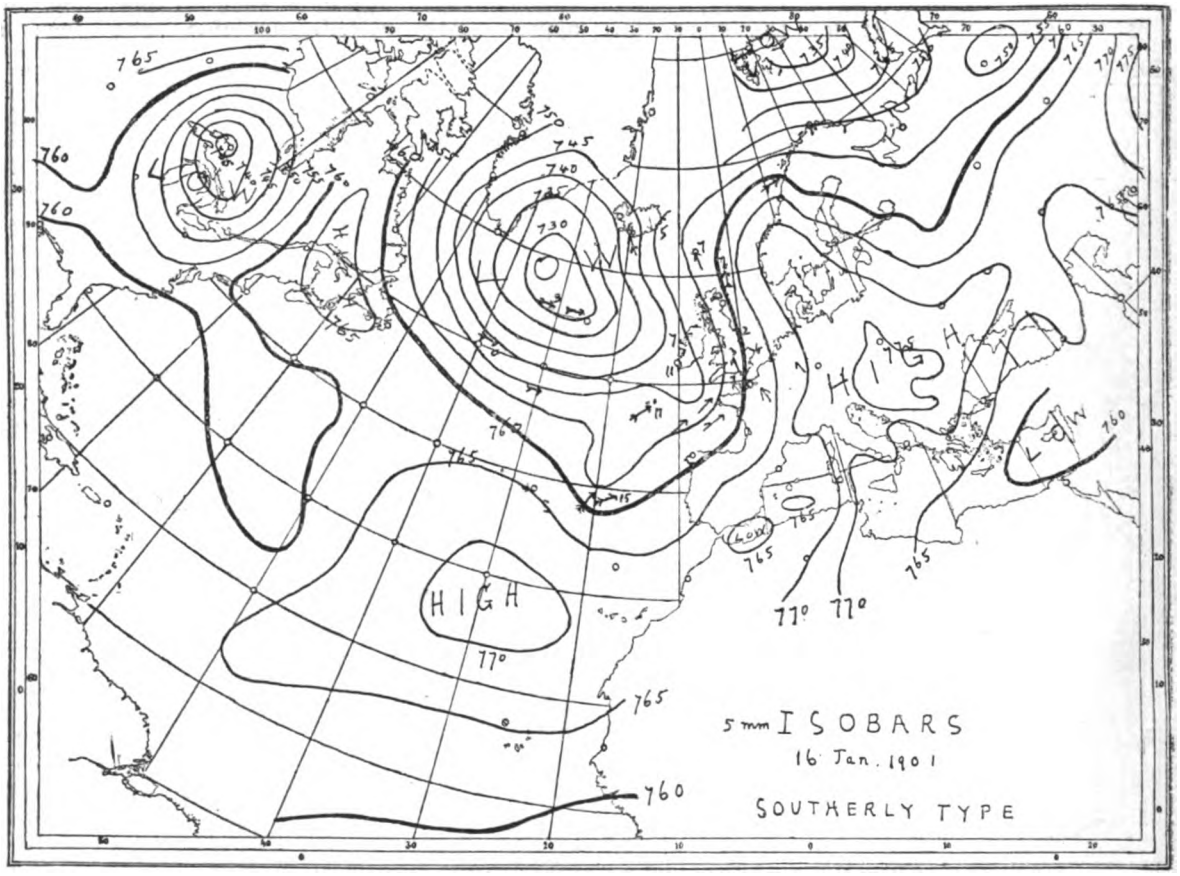


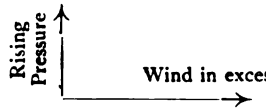
FIG. 13.

I. Every depression in which the winds are stronger than the normal winds will fill up more or less rapidly. Every depression in which the winds are below the normal winds will increase in intensity; and in this way feeble depressions frequently develop into intense cyclonic storms.

II. When a depression has winds above the normal in one place and below in another, it follows the path of least resistance, *i.e.*, it goes towards the place where the winds are below the normal (especially if these winds are divergent).

III. Rise of pressure takes place in a direction perpendicular to the wind which is in excess, and

it takes place from right to left. The rise of pressure extends along a line the foot of which rests on the line of the wind and is directed towards the left, as in the diagram:



M. Guilbert's specification of the normal wind is given in Continental units. We may take winds of forces 3, 5, 7, 9 on the Beaufort scale to be normal winds when the $\frac{1}{10}$ in. isobars are distant from each other 180, 90, 60, 45 miles approximately, *i.e.*, the normal wind is about two-thirds of the theoretical wind when friction and curvature are absent.

These rules, especially I. and III., are now used as aids in forecasting in many meteorological institutes. They are of considerable use for the British, when taken in conjunction with the rules:

(*a*) The "backing" of the wind from north-west or west towards south at Valencia or Black-sod Point is an indication of the approach of a cyclonic disturbance from the Atlantic.

(*b*) The wind will not be of gale intensity unless the gradient is steeper than $\frac{1}{10}$ in. in eighty miles.

Of course, in applying these rules, proper attention must be paid to the type of weather prevailing and to the general pressure distribution.

ISALLOBARS.

If we take the differences between the barometer readings and the readings taken at the previous observation, we obtain the amount of the change of pressure in the interval, and, if this latter is not too long, the time-rate of change of pressure. If the values so obtained are plotted on a map, a new chart is obtained, by drawing curves along which the values are the same. This is now called an "isallobaric" chart. These charts exhibit features similar to the isobaric charts. The curves form closed systems called by Ekholm "Fallgebiete" and "Steigungs-gebiete," *i.e.*, falling and rising regions. These regions move across the map in a similar manner to cyclones, but the paths have rather more regularity and show more "persistence," inasmuch as for a considerable period all tend to pursue the same general course. If we regard the pressure distribution as a variable element,

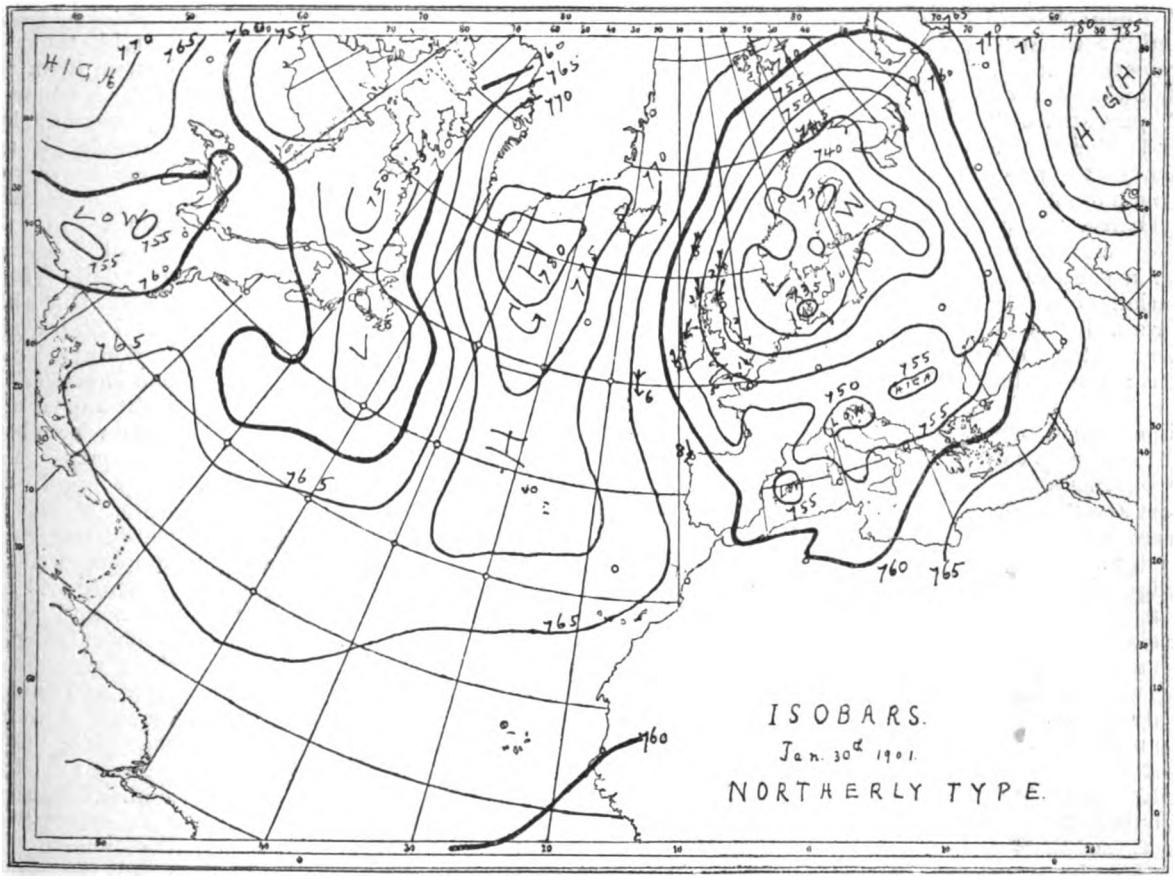


FIG. 14.

we may take its progress in time to be analogous to the motion of a point along a curve. If two isobaric charts are similar, the corresponding parts of the curve have a common point; if two isallobaric charts are similar the curves have parallel tangents. These charts have been used for a long time in America and in Norway, where they have proved of great use in forecasting storms. The method used is briefly as follows. The isobaric and isallobaric charts for the last two or three times of observation are taken, and the size and motion of the "Fallgebiete" and "Steigungsgebiete" noted. Knowing their "persistence" and their tendency to move round anticyclones, the isallobaric chart for a succeeding period can be drawn, and hence the isobaric chart for an epoch some time ahead can be obtained. From this a forecast can be made from the forecaster's knowledge of weather distribution associated with the various types of pressure distribution. Of course, the method gives results only approximately correct, so that it cannot be continued indefinitely ahead.

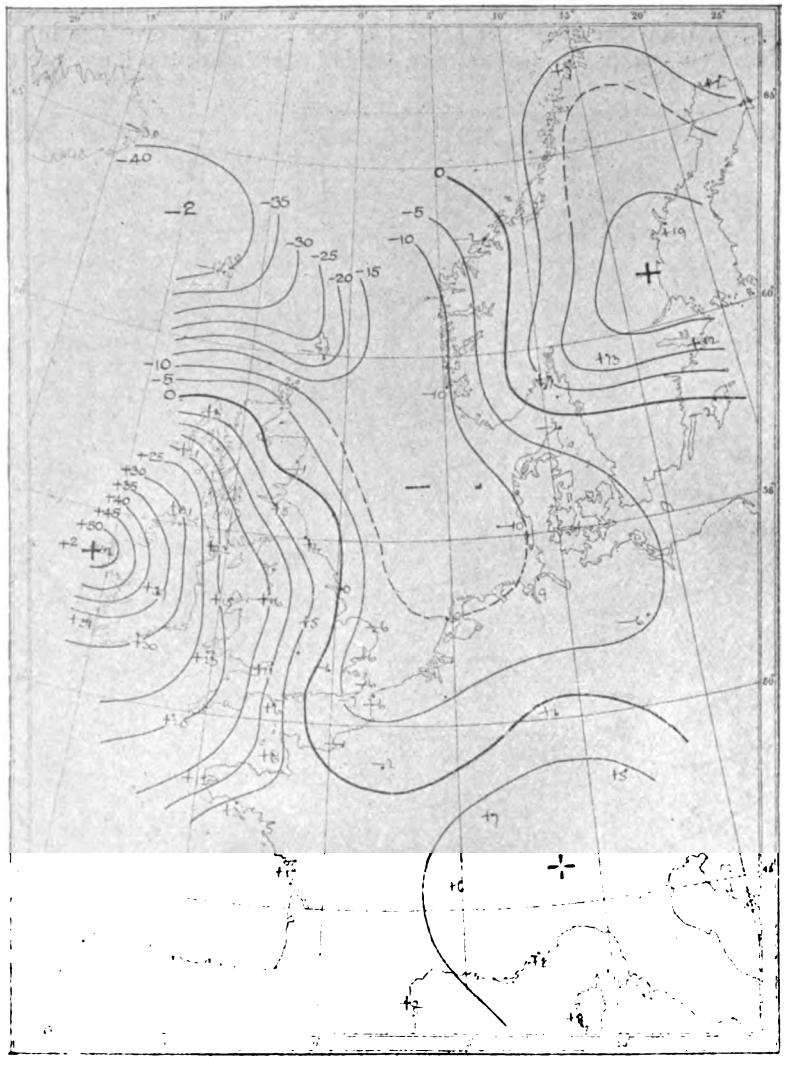


FIG. 15.

An example of an isallobaric chart is given in Fig. 15, where + denotes a "Steigungs-" and − a "Fallgebiete."

TEMPERATURE MAPS.

The isotherms for the region covered by the British charts are usually very irregular, like bad shots at a map of the country, as a geologist aptly remarked. They are used to some extent in conjunction with the isobaric charts to forecast the temperature, more especially when the weather is easterly. In continental regions they are of more importance, and the cold and heat waves in America are usually predicted with considerable success even several days in advance. The isobars enable the general motion of the air to be forecasted, and hence the progress and change in the isotherms marking the front of the wave can be estimated.

There is, however, a way in which the isotherms can be used in aiding forecasters in predicting the change in the pressure distribution. It is frequently the case that a distribution, in which the isobars and isotherms follow roughly the same course, with the high temperature over the low pressure, is unlikely to vary to any considerable extent in the period covered by daily forecasts. But when the isobars and isotherms cut one another at right angles at a place where both gradients are steep and the wind blows towards the lower temperature, the pressure will fall there and a cyclone existing in the neighbourhood will tend to move towards that place. Conversely, if a similar distribution exists with the wind towards the higher temperature, the pressure will rise, and an anticyclone will tend to move in the direction of the place.

This is in accordance with results obtained by F. M. Exner, who has shown that, if the surface temperature represents proportionally the mean temperature of the whole air column taking part in the circulation, the rate of change of pressure at any place is inversely proportional to the area enclosed between consecutive isobars and isotherms; the pressure increases when the theoretical wind is towards the higher temperature, and conversely. Of course, the surface temperature

does not always tell us the temperature of the air column even approximately; observations at 2 to 4 kilometres altitude would enable a very fair estimate to be made, and give an opportunity for a more general application of this method.

Figs. 16 and 17 show the pressure and temperature distribution over Europe on February 4th and 5th, 1909. On the 4th there is a low pressure region over the Baltic and Scandinavia which one might expect to move E. or E.N.E. But the isobars and isotherms over northern

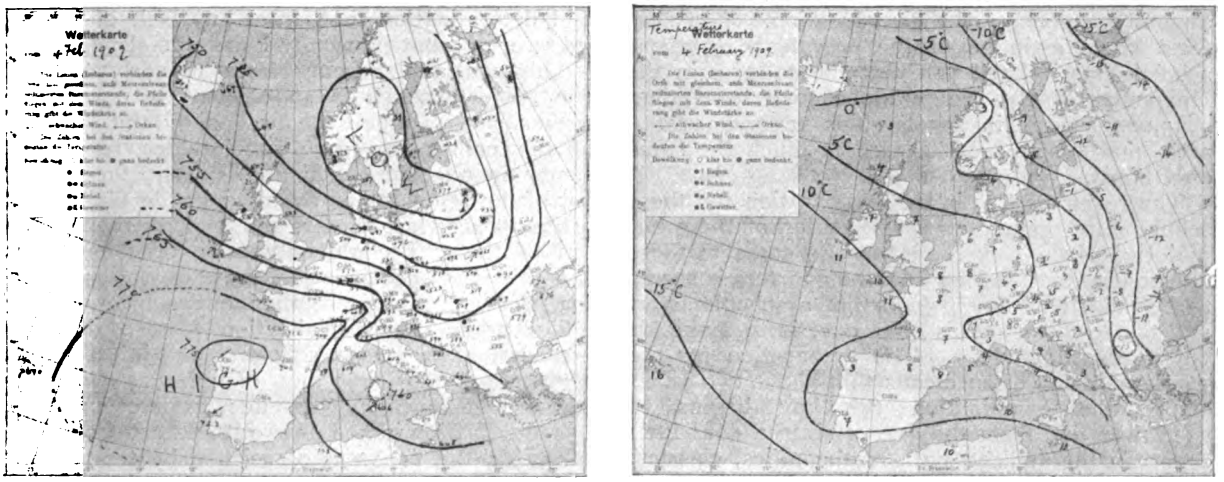


FIG. 16.—Pressure and Temperature, February 4th, 1909.

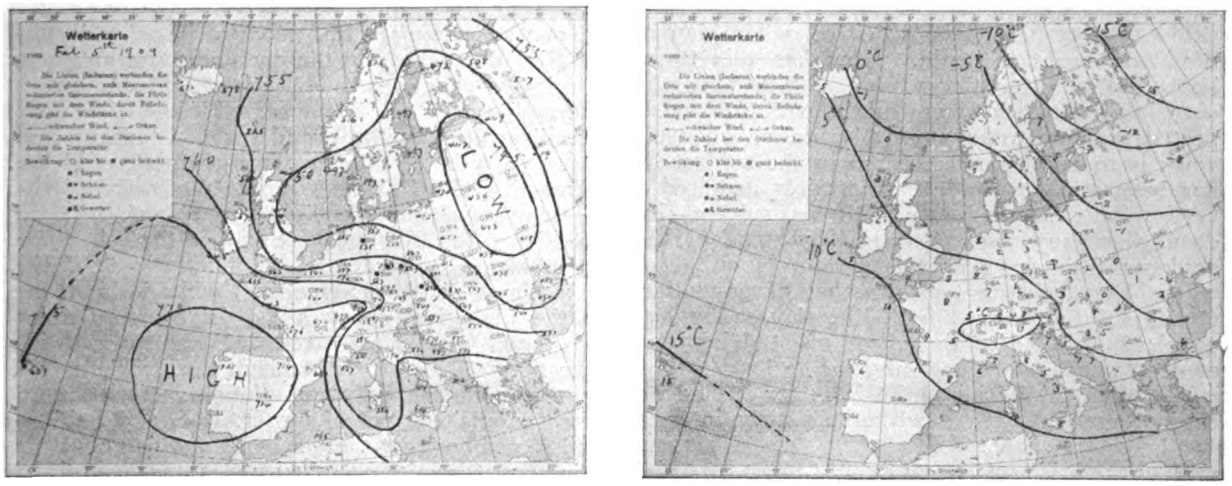


FIG. 17.—Pressure and Temperature, February 5th, 1909.

Russia run very nearly parallel, while east of Poland the isobars and isotherms are at right angles, and both gradients are steep. Moreover, the direction of the wind is towards the lower temperature. We therefore expect the depression to move in this direction, while the pressure distribution over northern Russia should not change. A glance at the next day's charts shows that this is exactly what occurs, and that there is a great increase in temperature north of the Black Sea.

EDUCATIONAL TRAINING FOR RESEARCH.[1]

By Prof. SIR J. J. THOMSON, M.A., LL.D., D.Sc., F.R.S.

IT has been my privilege to receive at the Cavendish Laboratory many students from Canadian universities. Some of these have been holders of what are known as the 1851 scholarships. These scholarships are provided from the surplus of the Great Exhibition of 1851, and are placed at the disposal of most of the younger universities in the British Empire, to enable students to devote themselves for two or three years to original research in various branches of science. I have had many opportunities of seeing the work of these scholars, and I should like to put on record my opinion that there is no educational endowment in the country which has done or is doing better work.

I have had, as I said, the privilege of having

[1] From the Presidential Address to the British Association on August 25th, 1909, at the Winnipeg meeting.

as pupils students from your universities as well as from those of New Zealand, Australia, and the United States, and have thus had opportunities of comparing the effect on the best men of the educational system in force at your universities with that which prevails in the older English universities. Well, as the result, I have come to the conclusion that there is a good deal in the latter system which you have been wise not to imitate. The chief evil from which we at Cambridge suffer, which you have avoided, is, I am convinced, the excessive competition for scholarships which confronts our students at almost every stage of their education. You may form some estimate of the prevalence of these scholarships if I tell you that the colleges in the University of Cambridge alone give more than £35,000 a year in scholarships to undergraduates, and I suppose the case is much the same at Oxford.

The result of this is that preparation for these scholarships dominates the education of the great majority of the cleverer boys who come to these universities, and indeed in some quarters it seems to be held that the chief duty of a schoolmaster, and the best test of his efficiency, is to make his boys get scholarships. The preparation for the scholarship too often means that about two years before the examination the boy begins to specialise, and from the age of sixteen does little else than the subject, be it mathematics, classics, or natural science, for which he wishes to get a scholarship; then, on entering the university, he spends three or four years studying the same subject before he takes his degree, when his real life-work ought to begin. How has this training fitted him for this work? I will take the case in which the system might perhaps be expected to show to greatest advantage, when his work is to be original research in the subject he has been studying. He has certainly acquired a very minute acquaintance with his subject—indeed, the knowledge possessed by some of the students trained under this system is quite remarkable, much greater than that of any other students I have ever met. But though he has acquired knowledge, the effect of studying one subject, and one subject only, for so long a time is too often to dull his enthusiasm for it, and he begins research with much of his early interest and keenness evaporated.

Now there is hardly any quality more essential to success in research than enthusiasm. Research is difficult, laborious, often disheartening. The carefully designed apparatus refuses to work, it develops defects which may take months of patient work to rectify, the results obtained may appear inconsistent with each other and with every known law of Nature, sleepless nights and laborious days may seem only to make the confusion more confounded, and there is nothing for the student to do but to take for his motto "It's dogged as does it," and plod on, comforting himself with the assurance that when success does come, the difficulties he has overcome will increase the pleasure—one of the most exquisite men can enjoy—of getting some conception which will make all that was tangled, confused, and contradictory clear and consistent. Unless he has enthusiasm to carry him on when the prospect seems almost hopeless and the labour and strain incessant, the student may give up his task and take to easier, though less important, pursuits.

I am convinced that no greater evil can be done to a young man than to dull his enthusiasm. In a very considerable experience of students of physics beginning research, I have met with more —many more—failures from lack of enthusiasm and determination than from any lack of knowledge or of what is usually known as cleverness.

This continual harping from an early age on one subject, which is so efficient in quenching enthusiasm, is much encouraged by the practice of the colleges to give scholarships for proficiency in one subject alone. I went through a list of the scholarships awarded in the University of Cambridge last winter, and, though there were 202 of them, I could only find three cases in which it was specified that the award was made for proficiency in more than one subject.

The premature specialisation fostered by the preparation for these scholarships injures the student by depriving him of adequate literary culture, while when it extends, as it often does, to specialisation in one or two branches of science, it retards the progress of science by tending to isolate one science from another. The boundaries between the sciences are arbitrary, and tend to disappear as science progresses. The principles of one science often find most striking and suggestive illustrations in the phenomena of another. Thus, for example, the physicist finds in astronomy that effects he has observed in the laboratory are illustrated on the grand scale in the sun and stars. No better illustration of this could be given than Prof. Hale's recent discovery of the Zeeman effect in the light from sunspots; in chemistry, too, the physicist finds in the behaviour of whole series of reactions illustrations of the great laws of thermodynamics, while if he turns to the biological sciences he is confronted by problems, mostly unsolved, of unsurpassed interest. Consider for a moment the problem presented by almost any plant—the characteristic and often exquisite detail of flower, leaf, and habit—and remember that the mechanism which controls this almost infinite complexity was once contained in a seed perhaps hardly large enough to be visible. We have here one of the most entrancing problems in chemistry and physics it is possible to conceive.

Again, the specialisation prevalent in schools often prevents students of science from acquiring sufficient knowledge of mathematics; it is true that most of those who study physics do some mathematics, but I hold that, in general, they do not do enough, and that they are not as efficient physicists as they would be if they had a wider knowledge of that subject. There seems at present a tendency in some quarters to discourage

the use of mathematics in physics; indeed, one might infer, from the statements of some writers in quasi-scientific journals, that ignorance of mathematics is almost a virtue. If this is so, then surely of all the virtues this is the easiest and most prevalent.

I do not for a moment urge that the physicist should confine himself to looking at his problems from the mathematical point of view; on the contrary, I think a famous French mathematician and physicist was guilty of only slight exaggeration when he said that no discovery was really important or properly understood by its author unless and until he could explain it to the first man he met in the street.

But two points of view are better than one, and the physicist who is also a mathematician possesses a most powerful instrument for scientific research with which many of the greatest discoveries have been made; for example, electric waves were discovered by mathematics long before they were detected in the laboratory. He has also at his command a language clear, concise, and universal, and there is no better way of detecting ambiguities and discrepancies in his ideas than by trying to express them in this language. Again, it often happens that we are not able to appreciate the full significance of some physical discovery until we have subjected it to mathematical treatment, when we find that the effect we have discovered involves other effects which have not been detected, and we are able by this means to duplicate the discovery. Thus James Thomson, starting from the fact that ice floats on water, showed that it follows by mathematics that ice can be melted and water prevented from freezing by pressure. This effect, which was at that time unknown, was afterwards verified by his brother, Lord Kelvin. Multitudes of similar duplication of physical discoveries by mathematics could be quoted.

I have been pleading in the interests of physics for a greater study of mathematics by physicists. I would also plead for a greater study of physics by mathematicians in the interest of pure mathematics.

The history of pure mathematics shows that many of the most important branches of the subject have arisen from the attempts made to get a mathematical solution of a problem suggested by physics. Thus the differential calculus arose from attempts to deal with the problem of moving bodies. Fourier's theorem resulted from attempts to deal with the vibrations of strings and the conduction of heat; indeed, it would seem that the most fruitful crop of scientific ideas is produced by cross-fertilisation between the mind and some definite fact, and that the mind by itself is comparatively unproductive.

I think, if we could trace the origin of some of our most comprehensive and important scientific ideas, it would be found that they arose in the attempt to find an explanation of some apparently trivial and very special phenomenon; when once started the ideas grew to such generality and importance that their modest origin could hardly be suspected. Water vapour we know will refuse to condense into rain unless there are particles of dust to form nuclei; so an idea before taking shape seems to require a nucleus of solid fact round which it can condense.

I have ventured to urge the closer union between mathematics and physics, because I think of late years there has been some tendency for these sciences to drift apart, and that the workers in applied mathematics are relatively fewer than they were some years ago. This is no doubt due to some extent to the remarkable developments made in the last few years in experimental physics on one hand, and in the most abstract and metaphysical parts of pure mathematics on the other. The fascination of these has drawn workers to the frontiers of these regions who would otherwise have worked nearer the junction of the two. In part, too, it may be due to the fact that the problems with which the applied mathematician has to deal are exceedingly difficult, and many may have felt that the problems presented by the older physics have been worked over so often by men of the highest genius that there was but little chance of any problem which they could have any hope of solving being left.

But the newer developments of physics have opened virgin ground which has not yet been worked over and offers problems to the mathematician of great interest and novelty—problems which will suggest and require new methods of attack, the development of which will advance pure mathematics as well as physics.

I have alluded to the fact that pure mathematicians have been indebted to the study of concrete problems for the origination of some of their most valuable conceptions; but though no doubt pure mathematicians are in many ways very exceptional folk, yet in this respect they are very human. Most of us need to tackle some definite difficulty before our minds develop whatever powers they may possess. This is true for even the youngest of us, for our schoolboys and schoolgirls, and I think the moral to be drawn from it is that we should aim at making the education in our schools as little bookish and as practical and concrete as possible.

I once had an illustration of the power of the concrete in stimulating the mind which made a very lasting impression upon me. One of my first pupils came to me with the assurance from his previous teacher that he knew little and cared less about mathematics, and that he had no chance of obtaining a degree in that subject. For some time I thought this estimate was correct, but he happened to be enthusiastic about billiards, and when we were reading that part of mechanics which deals with the collision of elastic bodies, I pointed out that many of the effects he was constantly observing were illustrations of the subject we were studying. From that time he was a changed man. He had never before regarded mathematics as anything but a means of annoying innocent undergraduates; now, when he saw

what important results it could obtain, he became enthusiastic about it, developed very considerable mathematical ability, and, though he had already wasted two out of his three years at college, took a good place in the mathematical tripos.

It is possible to read books, to pass examinations, without the higher qualities of the mind being called into play. Indeed, I doubt if there is any process in which the mind is more quiescent than in reading without interest. I might appeal to the widespread habit of reading in bed as a prevention of insomnia as a proof of this. But it is not possible for a boy to make a boat or for a girl to cook a dinner without using the brains. With practical things the difficulties have to be surmounted, the boat must be made watertight, the dinner must be cooked, while in reading there is always the hope that the difficulties which have been slurred over will not be set in the examination.

I think it was Helmholtz who said that often in the course of a research more thought and energy were spent in reducing a refractory piece of brass to order than in devising the method or planning the scheme of campaign. This constant need for thought and action gives to original research in any branch of experimental science great educational value even for those who will not become professional men of science. I have had considerable experience with students beginning research in experimental physics, and I have always been struck by the quite remarkable improvement in judgment, independence of thought, and maturity produced by a year's research. Research develops qualities which are apt to atrophy when the student is preparing for examinations, and, quite apart from the addition of new knowledge to our store, is of the greatest importance as a means of education.

It is the practice in many universities to make special provision for the reception of students from other universities who wish to do original research or to study the more advanced parts of their subject, and considerable numbers of such students migrate from one university to another. I think it would be a good thing if this practice were to extend to students at an earlier stage in their career; especially should I like to see a considerable interchange of students between the universities in the Mother Country and those in the Colonies.

I am quite sure that many of our English students, especially those destined for public life, could have no more valuable experience than to spend a year in one or other of your universities, and I hope some of your students might profit by a visit to ours.

I can think of nothing more likely to lead to a better understanding of the feelings, the sympathies, and, what is not less important, the prejudices, of one country by another, than by the youths of those countries spending a part of their student life together. Undergraduates as a rule do not wear a mask either of politeness or any other material, and have probably a better knowledge of each other's opinions and points of view—in fact, know each other better than do people of riper age. To bring this communion of students about there must be co-operation between the universities throughout the Empire; there must be recognition of each other's examinations, residence, and degrees. Before this can be accomplished there must, as my friend Mr. E. B. Sargant pointed out in a lecture given at the McGill University, be co-operation and recognition between the universities in each part of the Empire. I do not mean for a moment that all universities in a country should be under one government. I am a strong believer in the individuality of universities, but I do not think this is in any way inconsistent with the policy of an open door from one university to every other in the Empire.

MORAL EDUCATION IN SCHOOLS.[1]

By Prof. L. P. JACKS,
Editor of the *Hibbert Journal*.

THE demand for moral teaching has arisen, in the first instance, from the obvious consideration that the spread of knowledge through general education is socially dangerous when unaccompanied by moral advance. The demand has been greatly reinforced by the growth of the Imperial idea, which is awakening the national conscience and confronting the individual citizen with enlarged responsibilities. The moral needs of the Empire are such as to constitute a demand for "super-men." Efficiency is the word generally employed to express this fact, but "efficiency" means in this connection not merely technical knowledge in trade and courage in war, but moral qualities of a higher order still. The relations in which the Empire stands to its powerful neighbours demand from its citizens magnanimity and consideration for the rights of others; while the problem of subject races suggests the need of a highly developed humanitarian spirit.

Schoolmasters have been among the first to feel the pressure of these new demands, and the result is to be seen in reforms which are taking place in the universities, in public schools, and in primary education. In each case the object seems to be the training of character on lines more in harmony with the vast responsibilities of the Empire. The effort is being made to develop by various means the heroic element in the temper of the community. Among the means employed, the love of one's country has a chief place. The Empire is being shown as an object of such commanding worth in the world's history that the boy may come to regard it as demanding his self-devotion.

The virtues cannot be imparted one by one to young minds; nor should morality be made one among a number of set subjects. What is needed is the idea of an "end" which by becoming a

[1] Abstract of a communication to the Educational Science Section of the British Association at its meeting in Winnipeg, 1909.

principle co-ordinates the purposes of life. This is supplied in all teaching which promotes loyalty to the State, and the conditions of the Empire make the present highly favourable for a vigorous enforcement of this principle. On the other hand, all attempts to teach the virtues departmentally will probably fail to produce moral action when the subject of such teaching is confronted with the actualities of life. Morality in education is rather the name of a method, which should dominate the teaching of all subjects, than an independent subject in isolation from the rest.

A further mistake is that of supposing that the virtues can be taught to the young according to a fixed pattern. The attempt to do so leads inevitably to reaction against the idea of morality; and it has to be remembered that the value of all teaching is measured by the kind of reaction it provokes in the mind of the taught. In this lies the greatest danger of the moral teacher, inasmuch as he cannot control the reaction of his pupils' minds. He may, however, put a wise trust in the sanity of Nature. His task is to explain the truths of their environment to young minds in such a light that the facts themselves when so explained become incentives to moral action. Thus certain facts of geography become morally stimulating when they are presented as *human* facts. In all this the teacher has the warrant of the philosophical principle that the "Real is the Ideal." No fact is truly explained until some element of ideal worth has been shown to exist in it. To show this is moral education. Direct exposition of the moral law is valuable only when it points to a field of exercise where its principles are waiting to be realised.

The demand for moral education has an unwelcome aspect, in so far as it may be thought to proceed from parents who are anxious to escape from responsibility. The school can never replace the home in the matter of moral teaching. It would be well, therefore, if professional teachers were to imitate the methods of the Japanese by giving a large place in ethics to the strengthening of the family tie. This is enough to suggest that the problem of moral education is as much the concern of women as of men.

LONDON TRADE SCHOOLS.[1]

By C. W. KIMMINS, M.A., D.Sc.

THE problem of problems in London and elsewhere is to prevent children of fourteen years of age from drifting into unskilled labour in which there is no element of permanence. The difficulty is increased by the decay and gradual disappearance of the apprenticeship system, and the altered conditions of employment in workshops which make them unsuitable places for the training of craftsmen.

An elaborate scheme of junior, intermediate, and senior scholarships established by the London County Council makes ample provision for the brilliant children of the London elementary schools. The really capable child, even of the poorest parents, may reach the highest position by means of the scholarship ladder, passing at the age of eleven years into the secondary school, and thence by means of scholarships at the age of nineteen to the university or higher technical school. Provision is also made for the transference of children who do not reach scholarship standard to pass on to a higher form of elementary school in which a special bias may be given in training for commercial or industrial life in a course of instruction extending for a year or two beyond the age of compulsory attendance.

The trade school, however, is of a very special type for children who have to enter upon their life's work at the age of sixteen or seventeen, and who have already decided upon the trade they wish to enter. The age of entry into the trade school coincides approximately with that at which the boy or girl normally leaves the elementary school, viz., thirteen or fourteen years of age, and the course of instruction lasts for two or three years.

In London the boy or girl of fourteen who is physically strong and has received a fairly good education has no difficulty whatever in obtaining employment at a rate of remuneration which appears liberal for a child of this age. The consequence is that in the elementary school the vast majority of the children leave immediately they reach the age of fourteen and become wage-earners. In order to keep children at school above the compulsory age for any definite period, it is absolutely necessary, not only to give them free education, but, in addition, maintenance scholarships which will recoup the parents to a certain extent for the loss of the earnings of the children.

The scholarships for trade schools for boys extending over a period of three years are generally of the value of £6 for the first, £10 for the second, and £15 for the third year. The trade schools for girls generally have a two years' course, and the value of the scholarships is £8 for the first and £12 for the second year. Unsuccessful candidates who do not obtain scholarships may be awarded free places. For other pupils a low fee of generally 10*s*. a term is charged.

No candidate is eligible for a scholarship whose parents or guardians have an income which exceeds £160 a year from all sources.

The special features of the London trade schools are:

(1) The assistance given in the direction of the trade teaching by consultative committees of business men and women engaged in the particular trades for the training in which the school provides.

(2) The appointment of after-care committees, the members of which interest themselves in the scholars and advise them with regard to employment at the conclusion of the school course, and

[1] Abstract of a communication to the Educational Science Section of the British Association at its meeting in Winnipeg, 1909.

afterwards see that the conditions of their employment are satisfactory.

(3) The continuance of the general education of the pupils, only about one-half to two-thirds of the school time being given to actual workshop instruction.

(4) The prominence given to art instruction, not only in the technical requirements for the particular trade, but for the general development of a high standard of taste.

(5) The employment of teachers who have attained distinction as practical workers, and approximate the instruction as far as possible to workshop conditions.

(6) The holding of exhibitions of students' work to which employers are invited and at which offers are frequently made for the employment of students.

Trade schools for boys have been established in engineering, silversmithing, bookbinding, furniture and cabinet making, carriage building, art woodcarving, and various branches of the building trades. The trades for which schools have been established for girls are trade dressmaking, laundry work, upholstery, ladies' tailoring, waistcoat making, corset making, millinery, designing and making of ready-made clothing, and photography.

The development of trade schools in London is proceeding rapidly. The competition for the scholarships is becoming keener every year, and the work of the students is finding increasing favour with employers. No difficulty is experienced in finding suitable employment for boys and girls who have passed through the schools successfully.

PERSONAL PARAGRAPHS.

THE REV. H. A. JAMES, D.D., headmaster of Rugby School, was elected at the end of July as president of St. John's College, Oxford—of which he was an Honorary Fellow—in succession to the veteran Dr. Bellamy. During his headmastership, Rugby has developed a great deal on many sides. Like his predecessor, Dr. Temple, Dr. James was a staunch upholder of the complete traditional classical curriculum as an educational instrument, and he has often amused the Headmasters' Conference by his outspoken and common-sense resistance to proposals of reform, such as the omission of Greek from school entrance examinations. An amusing instance of his plain speaking was forthcoming last December, when, at the Conference meeting at Merchant Taylors' School, he characterised some remarks of Mr. R. Cary Gilson as "unmitigated rubbish." Dr. James has reached the age of sixty-five, the age generally accepted as that at which assistant-masters at any rate should be compulsorily retired. He has held the reins at Rugby for fourteen years, but had had previous educational experience as a Fellow of St. John's for three years, as an assistant-master at Marlborough for three years, as headmaster of Rossall for eleven years, and as principal of Cheltenham College for six years. Thirty-one years in the responsible work of headmastering is now to be crowned by the presidency of an Oxford college.

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THE West Sussex Education Authority is making its first plunge into the ocean of secondary education by opening at Chichester a high school for girls. It is hoped that the school will command the confidence of parents, and that fees paid will make it practically independent of the rates. The prime factor in this confidence will certainly be the headmistress. The governors have elected to this post out of a large field Miss Hilda M. M. Lane, under whom the school will be opened late in September. Miss Lane was educated at the Girls' High School, Wakefield, the Ladies' College, Cheltenham, and Newnham College, Cambridge. She commenced her teaching career at the Wakefield School in 1889, and then took a first class in the Cambridge Historical Tripos in 1897, and a B.A. at Trinity College, Dublin, in 1906. From 1899 to 1903 she held the appointment of history specialist at the Leeds Girls' High School, and afterwards went to the University College, Bangor, as lady superintendent of the women students, and warden of the Women's Hall of Residence. In 1907 she was appointed assistant-lecturer in history at Bangor. The governors have secured the services of a woman of scholarship and experience who should be able to organise and create.

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MR. FREDERIC GEORGE KENYON, at the age of forty-six, has been appointed principal librarian of the British Museum, in succession to Sir Edward Maunde Thompson. Mr. Kenyon's connection with the British Museum, both hereditary and personal, is long and distinguished. His maternal grandfather, Mr. Hawkins, was keeper of antiquities. He himself was appointed assistant in the British Museum in 1889, having been educated at Winchester and New College, and having won a Fellowship at Magdalen in 1888 and the Chancellor's Prize for English Essay in 1889. He has achieved many distinctions in the world of learning, among them being the degrees of D.Litt. (Durham) and Ph.D. (Halle), and corresponding memberships of the Academies of Berlin and Bologna. Since 1898 he has been assistant keeper of manuscripts in the British Museum. Personally, I first made acquaintance with his writing in the *editio princeps* of the "Constitution of Athens" (1891), and the classical texts from papyri in the British Museum in the same year. He has compiled a catalogue of Greek Papyri in the Museum in three volumes, and among his other works may be mentioned "Browning for the Young" (1890), "Bacchylides" (1897), "The Letters of E. B. Browning" (1897), a "Handbook to the Textual Criticism of the New Testament" (1901), and the text of "Hypereides" (1907). Dr. Kenyon rendered great services to the Classical Association in its early days as treasurer.

MISS F. H. MELVILLE, who has recently been appointed head of Queen Margaret's College, was educated in Edinburgh and in Germany. She completed the Edinburgh course for the honours degree of B.A. in 1896, and graduated the following year with first-class honours in philosophy. After carrying off a succession of honours and prizes, particularly in philosophy, during her academic career, Miss Melville acted from 1896 to 1899 as tutor to Prof. Pringle-Pattison's class of logic, psychology, and metaphysics at Edinburgh. In the latter year she was appointed lecturer in mental and moral science at the Cheltenham Ladies' College, and in 1900 warden of the University Hall, St. Andrews.

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MR. LOGIE ROBERTSON'S "History of English Literature" has been authorised to be used for at least four years in the Royal Athenæums and higher grade State schools of Belgium. Mr. Robertson is a teacher of English in Edinburgh.

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THE REV. ALFRED JAMES CARVER, D.D., for twenty-five years master of Dulwich College, died on July 25th. He was born in 1826, and educated at St. Paul's School, chiefly under Dr. Kynaston. He had a successful career at Oxford, crowned by a Fellowship at Queen's in 1850. He went back to St. Paul's as surmaster under Dr. Kynaston. In 1858 he was appointed master of Dulwich College, of which he saw during his tenure of office a great development, leaving it at his resignation in 1883 a public school of some 600 boys. Much was due in these early days to his management of the governing body and the Charity Commissioners. He was nominated Honorary Canon of Rochester by Bishop Thorold in 1882.

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THE Council of the Bedford College for Women has made the following appointments: Miss F. C. Johnson, M.A. (Lond.), to be lecturer in French and head of the department of French; Miss E. Strudwick, M.A. (Lond.), to be lecturer in Latin and head of the department of Latin; Miss D. Tarrant, Class. Trip. Cantab., to be assistant-lecturer in classics; Miss F. R. Shields, M.A. (Lond.), to be assistant in philosophy; Miss E. M. Spearing, Med. and Mod. Lang. Trip. Cantab., to be assistant in English; and Miss A. N. Halket, B.Sc., to be demonstrator in botany.

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MR. A. J. SPILSBURY, who has been appointed headmaster of Aske's Hampstead School, is an energetic man on the youthful side of forty. He was educated at Christ's Hospital and Queen's College, Oxford, and spent some time at the British School at Athens. His first assistant-mastership was, I believe, at Christ's College, Brecon; next at Brighton College under Mr. Titherington; and last at the City of London, under Mr. Pollard and Dr. Chilton. At the City of London he proved himself a capable teacher and a successful organiser and officer of cadet corps. He has lectured at the East London College, and much good work from his pen appeared in the now defunct *School*. He is a keen and capable man, and one whose experience at the City of London should tell at such a school as that which he has been elected to serve as headmaster.

ONLOOKER.

NATIONAL NEGLECT: ITS COST AND ITS REMEDY.

THAT amorphous entity which we call the British Empire bears here and there the impress of minds that laboured not only with energy, but with a far-sighted prescience as well. In many respects, however, it resembles a curious mosaic, or an enormous unmethodised building, in parts of which coping stones have been used for foundations, while here and there foundation stones have been inserted in an attempt to strengthen a weak and tottering superstructure. These discrepancies and contradictions are naturally most obvious during the period of rapid development which has distinguished the last three-quarters of a century; and nowhere are they more glaringly proclaimed than in the heterogeneous orderings of what is euphemistically styled our system of national education—a system of inverted methods, an education which, by its very nature, is so great a failure that, if persisted in, it can—to quote the Bishop of London's words—"only end in the ruin of England." A medley of good intentions wastefully exploited; sporadic impulse, founded on sentiment—and limited by a hunger for "results"; money squandered like water in elaborating mistakes, and more money called for to smother up the effects of those mistakes, while practically nothing is done for their prevention.

A pitiful England passed the Factory Acts, limiting child labour, and folded her hands in self-satisfied complacency, withdrawing from parents the main inducement to maintain their children in good physical condition (and, to a large extent, depriving them of the means of doing so), but giving no other inducement and employing no compulsion to that end in its place. She enacted that "education" should be both compulsory and free, and took nearly forty years to realise that little could possibly be gained, while much was certainly and irretrievably lost, by endeavouring to cram discrete fragments of learning into the minds of children whose lives were, for the most part, unwholesome and their bodies ill-fed. The educational reformers were right in insisting that ignorance lay at the root of the national evils which they deplored, and that character could not be built up without appropriate instruction. But a full generation has had to suffer in order to prove the inadequacy of a system of State Education based upon a theory which practically ignored the absolute necessity of physical training and personal hygiene being accorded a position equal and complementary to that of intellectual instruction in the training of the young. By this time it had become

only too certain that many children throughout the country were gaining little or no benefit from the instruction lavished on them, and that not a few were being educated in the wrong way. It was necessary, in the first place, to ascertain the nature and the extent of their several disabilities. But even when the medical inspection of school children was imposed by Act of Parliament, its methods were not defined; the duties of the school doctor, thus called into existence, were undescribed; and the State made no provision for dealing with the physical defects which it was known would be revealed by the investigations it had called for.

In his lucid and comprehensive book on the medical inspection of schools,[1] Dr. Hogarth has gone far to clear up the confusion of thought which still exists in connection with this subject. He sets the whole matter before us in its true relation to the State, the cause of education, and the individual child. As a practical and efficient means of detecting the existence of disease—an essential for its cure and the first step towards its prevention—medical inspection directly subserves the State, and that in a direction in which help is sorely needed. It makes medical science an integral part of our educational system, thus securing the due care and training of both body and mind, and so—putting our older competitors aside for the nonce—at length raises this country to the level already attained in Argentina. And, seeing that medical inspection necessarily implies as its inevitable corollary the proper treatment (both physical and intellectual) of those who are found to be defective, it comes into direct relation to the individual child. It is here that we face the awakening of a new conscience and the realisation of a long-accumulated debt which must be wiped out if the progress of national degeneration is to be checked and the renaissance of the race achieved.

Half a century ago the children of the country were regarded "in the lump." Those who, unable or unfitted to profit by the one-sided instruction thrust upon them, drifted into poverty, vice, or crime, were still treated "in the lump" by doses of poor law administration, reformatory, or gaol, in accordance with their assumed deserts. Money was poured out like water—and, like water, for the most part wasted—without materially affecting the inexorable law which decrees that neglect of a people's children entails the penalty of national decay, and ultimately the nation's ruin.

Dimly some inkling of the true state of things was apparent here and there. But the attitude of the nation at large was for the most part one of apathy, ignorance, and neglect, stirred only spasmodically by zeal too often misdirected. Only now is England being brought face to face with the serious problem of a vast aggregate of unfulfilled responsibilities. For fifty years our system of national education was, at its best, addressed to the development of intellect and, within limits, to the formation of character, while the essential of ability was taken for granted. Bricks were to be made, but there was no care that straw was at hand for their making. Food was served, but without salt. It is no wonder that the building threatens to fall and that the people's strength has weakened. Uneasiness was aroused by the realisation not only of the misery, the degradation, the poverty, and the vice of the people, but by the increase of crime and lunacy and the evidences of serious mental and intellectual deterioration. But it has needed the revelation of the neglected health and the inefficient education of the great masses of her children—a revelation declared by the medical inspection of her schools—to awaken England to the imminence of a national catastrophe, and to make her rulers understand how intimate is the relationship between the physical fitness of a child and the development of his potentialities for good or evil.

The first part of Dr. Hogarth's book is an admirably condensed history of the development of modern educational systems and of the legislation which has been applied to them in our own and in other countries. But the major part of its bulk is devoted to the subject indicated by its title, considered very fully and clearly in its several relations to the State, the school doctor, the child, and the public at large. His review of the recent past constitutes an indictment—clear and ruthless, but not extravagant—of methods the failure of which is due to apathy and *laissez faire* in combination with a perverse blindness to essentials almost obvious. But his criticism is by no means merely destructive. More than half his pages are devoted to a full and precise exposition of the means by which alone deterioration can be checked, prevented, and replaced by improvement. The national bill of long-accumulated obligations, as yet undischarged, is enormous. Its liquidation calls for a supreme national effort and must involve a heavy outlay. But, humanly speaking, the price is that demanded for nothing less than the salvation of a nation. Nor is it unbearable. Were the huge sums now employed by our numerous charitable institutions of all kinds, in earnest endeavours to cope with evils full-grown, applied under scientific supervision to preventing their birth and development, the end we need to keep in view—the regeneration of a race in health and happiness—would be assured so far as human efforts may avail. It is certain that without such effort we may hope in vain. Poverty, vice, and crime we may not be able to abolish; but two facts are not to be ignored: we can, if we will, cease to manufacture the poor, the vicious, the criminal, and the lunatic out of material capable of higher ends; and prevention is not only better than cure, but far more easy, infinitely less costly, and a nobler thing to strive for.

As a monograph upon one of the most important questions of the day, the work to which

[1] "Medical Inspection of Schools." By A. H. Hogarth. 360 pp. (Henry Frowde; Hodder and Stoughton.) 6s. net.

we have referred appeals not merely to those directly concerned with elementary education, but practically to every British citizen. Admirably written, clearly printed, handy in size, and provided with a good index, it teems with information and with suggestions such as neither the statesman nor the educationist can afford to ignore. That such a book should be needed is scarcely to our credit; yet its appearance is to be welcomed, with chastened satisfaction, as a practical corroboration of the statement that "it is only now, in the twentieth century, that modern civilisation is again beginning to approximate to the system which obtained in ancient Greece, when a national school which trained the mind only and neglected the body of the pupil was an inconceivable institution."

AMERICAN UNIVERSITIES AND COLLEGES.[1]

AMONGST the many institutions which owe their origin to Mr. Carnegie, none is likely to be more potent in its influence than that with the work of which this report deals. The annual income of the trust exceeds £100,000, and this sum is being in the main applied to the provision of pensions for teachers in universities and colleges of recognised standing. The institution has found such favour that even the professors of the State universities have expressed a desire to be embraced in its provisions, and, in order to make that possible, the founder has, with characteristic generosity, increased the original endowment from ten to fifteen million dollars.

The question of what institutions shall receive recognition is the business of the trustees. They may also give special recognition to individual teachers who happen to be serving in institutions which, for one reason or another, have not been placed on the approved list. The chaos of higher education in the States has made the task of the trustees a very formidable one. The control of all forms of education is in the hands of the several States, and whilst there is a generally accepted minimum standard for the primary school, ideas about college and university education differ enormously. This comes out clearly in the variety of standards which academic bodies demand of candidates for admission to their courses. At Harvard and Radcliffe, for example, sixteen units is the normal requirement, whilst eight units will secure admission to the University of South Carolina. Even this wide variation is enormously increased by the fact that each institution reserves to itself the right to consider special cases. At the discretion of the faculty a boy whose accredited school courses do not reach the required number of units may be conditionally admitted. Thus the proud title University is no guarantee of the academic level of the work that is being done within its walls.

The policy of the Carnegie trustees is, in the first place, directed towards a levelling-up of standards of admission, and, in the second place, towards securing their more rigid application. They urge with much force that the efficiency of university teaching is particularly bound up with this second point. Looseness in this regard has been increased by the competition of universities for students, and abuses of all kinds have crept in. A youth pleaded for special consideration on the ground that he had failed in the admission examination. His ingenuousness was too much for the discretion of the faculty. The candidate was duly registered.

It is even more to the interest of the institutions than to that of the teachers that the universities should so organise themselves as to secure recognition. A crop of old professors who are relatively inefficient is a burden not easily borne; at the same time, in the absence of reasonable retiring allowances, the burden cannot be got rid of without a scandal. It is not therefore surprising to find that those responsible for the administration of this foundation have come to grips with vital problems in American education, and the account of the third year of their stewardship is a remarkably interesting and statesmanlike document. It is marked from beginning to end by a frankness and a considerateness of statement which is, one cannot doubt, a reflection of the whole *modus operandi* of the trustees.

The subjects dealt with are as varied as they are interesting. The volume is nothing less than a survey of the machinery of higher education as it actually is in the States, and incidentally it tells us much of the way in which the machine works. As has already been pointed out, the control and cost of education is an affair of each individual State, and the trustees deprecate a new and growing tendency to look to Washington for grants in aid. They are not, however, blind to the dangers to which educational administration is liable when it is entirely free from central direction and control; and in a certain measure they are themselves rapidly taking the place of a State department for the supervision of higher education.

Whatever we may think of the position in the abstract—a body, privately endowed, dictating the terms on which they will confer important favours upon universities and other institutions of learning—there can be little doubt of the wisdom and farsightedness of those at present directing the policy of this great trust. They are fully alive to the delicacy of their task as well as conscious of the enormous power they wield. Of particular interest to Englishmen is their attitude towards the tax- and rate-supported universities the government of which is in the hands of representative business men. The notorious case of the University of Oklahoma is the occasion of a careful pronouncement on the subject.

[1] "The Carnegie Foundation for the Advancement of Teaching." Third Annual Report of the President and Treasurer, October, 1908. viii+211 pp. (New York: 576, Fifth Avenue.)

A newly elected board of regents dismissed a successful president and a number of teachers, appointed a new head and the new members of the professoriate without taking expert advice. In dealing with the case, the trustees point out the seriousness of such action. The governing body had inflicted a blow at academic integrity and offered an indignity to the teaching profession that was felt in every university in the country. But the gentlemen concerned were all honest and well-meaning. Their good faith is not questioned. Their fault lay in confusing government and administration—a confusion which is not altogether absent from the minds of those in high places in the nation's councils. "If the situation were not so pathetic, if it had not involved such cruel hardship, there would be something amusing in the picture of this group of busy business men gravely sitting down to choose professors of psychology and education." The moral of it all is that the University Council should first appoint a strong president, and, having got him, leave to him all questions of university administration. Within the financial limits laid down, he should have a free hand. Hasty or improper action on his part will be rare, for he will be jealous of the reputation of his institution in the eyes of the academic world. "No university in this day lives to itself, any more than a State or a community can live to itself," and in the long run it is the academic, not the lay judgment, which will determine the standing of the university.

The report gives many vivid pictures of a state of affairs which is perhaps peculiar to the States, where, "especially in the south and west, college rivalry has led not only to a most undignified solicitation of students but to a shading of fees to the loss of the college income. A smart parent, by pitting one college against another, can often secure a large reduction in the cost of tuition, if not its entire remission during the first year."

Space forbids any further reference to the many deeply interesting topics discussed or reported on. The document tells the story of a new force in American higher education in an altogether admirable way.

POETRY AND CRITICISM.

NO living critic of English poetry so completely commands the confidence of the judicious reader as Dr. Bradley.[1] He has won that confidence by a rare combination of qualities—a critical dislike of overstatement joined to an enthusiasm for the great things in literature, catholicity of taste united with a strong personal affection for particular poems or passages, and a unique power of analysing the precise secret of the impressiveness of poetry. Several of the lectures in this volume are concerned, as was the whole of the professor's last volume, with Shakespeare—"Antony and Cleopatra," "Falstaff," "Shakespeare the Man," "Shakespeare's Theatre and Audience." It should be noted here that the last-named essay is of special importance and practical interest to the schoolmaster. Other essays deal with "Poetry for Poetry's Sake" (Dr. Bradley's inaugural lecture, already published in a separate form), "The Sublime," "Wordsworth," "Shelley's View of Poetry," "The Letters of Keats." Even after all that has been written on Wordsworth by able and sympathetic interpreters, the essay in this book, with its insistence that "The road into Wordsworth's mind must be through his strangeness and his paradoxes and not round them," is illuminating.

In "English Literature in the Nineteenth Century"[1] Mr. Laurie Magnus gives us "not so much a history of English literature between 1784 and the present day as a survey of that literature as a whole and an essay in its criticism." It is the work of one who has read and thought and judged for himself, and appears to be singularly free from commonplaces of criticism accepted and handed on. It is also delightfully different from the ordinary handbook in which you cannot see the wood for the trees: avoiding unnecessary particularity of detail, the writer performs a higher service by distinguishing the main streams of tendency. There are some good sayings, as when, after calling 1814–1824 the most wonderful decade that poetic England has enjoyed, Mr. Magnus adds, "Her enjoyment is more tranquil in retrospect." On the other hand, the style sometimes wearies by its too continual effort at impressiveness, and sometimes offends by imperfectly reconciled metaphors—as when Keble's sermons are described as "*afire* with the simple righteousness which was the *keynote* of his aims."

Prof. Francis B. Gummere, of Haverford College, is already known in England—though not yet so well known as he deserves to be—for his knowledge of early English poetry and his fine literary taste. His latest book[2] presents not only "Beowulf," but also the surviving fragments of "Finnsburg," "Waldere," "Deor," "Widsith," and the German "Hildebrand," in a modern English form which as nearly as possible reproduces the metres and style of the originals. The achievement is a notable one, and the introduction and notes are quite admirable.

The many reprints of the first series of Palgrave's "Golden Treasury" which have appeared since the original edition (afterwards altered and enlarged more than once) passed out of copyright, testify to its continued and increasing popularity. The second series—a choice selection from "the finest work of our greater Victorian poets"—is still copyright and less universally known. Its preparation cost its compiler "thrice the labour

1 "Oxford Lectures on Poetry." By A. C. Bradley. ix+395 pp. (Macmillan.) 10s. net.

1 "English Literature in the Nineteenth Century: An Essay in Criticism." By Laurie Magnus. ix+418 pp. (Melrose.) 7s. 6d. net.

2 "The Oldest English Epic." By Francis B. Gummere. ix+203 pp. (Macmillan.) 4s. 6d. net.

of the first," so great was the bulk of the lyric poetry produced in the nineteenth century. One service performed by the second series has been the securing of a deserved immortality for Arthur O'Shaughnessy. It is pleasant to have the two series in one comely volume.[1]

MALARIA IN ANCIENT GREECE.[2]

IN this work Mr. Jones rewrites, with additions and revision, his first book on Malaria, in which an attempt was made for the first time to collect the evidence on that subject and to connect it with the decline of the Greek race. The publication of that book excited widespread attention, and the theory has already begun to find its way, as at least a *vera causa*, into other books. The author's appeals for further information have made him acquainted with the modern conditions and results of malaria; this volume contains in particular a valuable analysis of the state of modern Greece. For practical physicians, this part of Mr. Jones's essay is of much value; for the scholar, what follows.

Mr. Jones collects all the available evidence, first from non-medical, then from medical writers; we do not think he has left much for successors to glean. He finds very few allusions to fever in the early literature, and some of them are very puzzling (*e.g.*, what is ἠπίαλος?). It is important to note that the thesis here set forth does not depend on proving that there was no malaria in Greece before the time assumed for its coming. Malaria may be present continually, and little known, so long as it does not become general; and the accidents of intercourse may make it suddenly become general: this has actually taken place within the range of skilled observation. In describing the effects of malaria, Mr. Jones does not go beyond what can be proved; in fixing on malaria as one cause of the decline of Greece he is within the bounds of possibility, even of probability. He claims no more. The question has more than an academic interest, because some have thought that similar effects may result from influenza. It is certain that some phases of public opinion in England show the weakness and lack of courageous foresight which used to be shown, and that we are more influenced than formerly by sentimentalists and faddists.

Dr. Withington uses the facts collected to throw light on the sudden popularity of Asclepius in the fourth century. He thinks this to be due to the spread of a disease mysterious in its origin and not yielding to treatment, which drove sufferers from the scientific physicians to magic, to inoculation and faith healing. The book is provided with admirable indices, and its whole method is rigidly logical and scientific.

[1] "The Golden Treasury of Songs and Lyrics." By F. T. Palgrave. Complete edition. xii+648 pp. (Macmillan.) 3*s.* 6*d.* net.

[2] "Malaria and Greek History." By W. H. S. Jones. To which is added "The History of Greek Therapeutics and the Malaria Theory." By E. T. Withington. xii+176 pp. (Manchester University Press.) 5*s.* net.

SCIENCE IN PUBLIC SCHOOLS.

THE Board of Education has just issued Educational Pamphlet No. 17, with the title "Report on Science Teaching in Public Schools represented on the Association of Public Schools Science Masters." The material for the report has been collected by the association, and Mr. O. H. Latter (Charterhouse) has acted as general editor.

No attempt has been made to give a critical review of the efficiency of science teaching at the present time; but although incomplete in this respect, the document before us is full of matter which will repay study. It begins with a brief history of science at Rugby, Clifton, Cheltenham, and Charterhouse prior to 1870. The account of early Rugby science is supplied by Canon Wilson. It is interesting to learn that the first step towards encouraging scientific pursuits was due to Dr. Arnold about 1840, when he invited boys to bring back after their holidays specimens of rocks and road-materials of their own neighbourhood. These formed the nucleus of a geological museum. A master was appointed to teach science about ten years later, and Canon Wilson took up the work in 1859, teaching in the cloak-room of the town hall. He had a few pieces of fairly good apparatus, and taught a variety of subjects in "courses" each lasting one term. One result was that a number of the older boys took up as a "science extra" Mill's "Logic," Book III., "On Induction." We are told that Dr. Temple was much struck with this result of science teaching. As we read the report we are impressed with the fact that the introduction of science into public schools has been due in the main to the disinterested enthusiasm of a few pioneers.

Other causes which contributed to the advance were: (1) the Report of the Public Schools Commission (1863), (2) British Association reports (especially those presented at Dundee in 1867 and at Bath in 1888), (3) the introduction and growing importance of science subjects in examinations conducted by the universities, and (4) the need of scientific information by boys entering certain professions.

On p. 2, last sentence, Mr. Latter draws an inference which is unjustified; the employment of an external examiner does not imply that the school work is pursued from "examination motives." It would be as reasonable to assume that a firm which has its accounts examined periodically by an accountant is conducting its business in order to get a favourable auditor's report.

We hear too little in the report of the growth from these early beginnings to the present state of affairs. Deserved recognition is paid to the influence of Profs. Worthington, Armstrong, and Miall in improving the methods of teaching. We are also told that the reform of the army examinations has led to a great increase in the number of boys learning science on the military

sides of schools. This involved the augmentation of science staffs, and the erection of new laboratories with increased facilities, which are now enjoyed by classical and modern sides as well as by army candidates.

Following this retrospect comes the main body of the report, which is based on information obtained by a *questionnaire* sent out to the seventy-one schools and colleges on the list of the Association of Public School Science Masters. From forty-six replies were received, twenty-four made no response, and one school declined to supply information. We subjoin extracts dealing with (1) number of scholars, (2) number of masters, (3) laboratory accommodation, (4) servants and assistants.

From the section which deals with the financing of the science teaching (exclusive of masters' salaries) we learn that in a small group of schools the cost per boy per hour averages just under 3*d*. This includes wages of laboratory assistants, also cost of gas, water, and electricity. The means of meeting the expenses are too varied to admit of generalised statement, but it is good to learn that no complaint has been received as regards adequacy of supplies. It is felt that those in authority do their best to develop the scope of the science teaching so far as the resources at their disposal permit.

The schemes of science work in five schools are set forth in detail in an appendix. Those who are responsible for drafting or working similar schemes will do well to obtain copies. The biology scheme of school "E" is of much interest, being the most completely worked out scheme with which the writer is acquainted.

The number of periods per week devoted to science on classical sides range from two to seven, on modern sides about six periods is the average; but in a few instances the periods are as many as eighteen or twenty. We agree with the opinion expressed in the report that "it is almost impossible that a subject to which only two periods per week are allotted should rank as important in the eyes of the pupils." We welcome the statement that it would be a great advantage to "specialists" if at least two periods a week were invariably assigned to English literature in complete disregard of all impending examinations.

Not the least useful items in the compendium of information in the forty pages of the pamphlet are the extracts from descriptions of "methods" employed at each of thirteen schools. They illustrate quite happily the "freedom and elasticity" of the public schools. So long as the masters hold office for several years it is probably of advantage that each should be free to develop his teaching in the line of his own preference. The boys will gain by the more enthusiastic teaching. This free play for the individual science master should be made at once more fruitful and less bizarre in its effects by frequent conferences among science masters. There is evidently much work for the P.S.S.M.A. to do, and we hope it will convince the twenty-four members who failed to respond of the advisability and fairness of bringing their experience to improve the common stock, and of thus promoting the solidarity of their profession and the better instruction of their pupils. Looking to the future of science teaching in the public schools, it may well be that the foundation of the Public School Science Masters' Association in 1900 will prove the most pregnant event in the history of the movement. In the meantime this report stands as instance of its useful labours. We are glad that the editing of it was entrusted to Mr. Latter, and that the Board of Education has issued it in a cheap and convenient form.

NUMBER OF SCHOLARS RECEIVING INSTRUCTION IN SCIENCE.—The total number of boys in these schools may be taken as approximately 14,714; of these about 9,013, or just over 61 per cent., are receiving more or less training and instruction in science as part of the regular school course. A caution is here necessary lest it should be supposed that the remaining 39 per cent. neither have nor will have, ere their school days are over, received any such training. Such an inference would be entirely incorrect, for it is not uncommon to find that no science is taught in the lowest forms, which are composed of young boys destined to be caught in the scientific net which is stretched wide across the middle part of the great majority of schools. Hence it is only those mentally incapable of ever rising *e profundis* who fail to get any tuition in science. At the other extreme is again a number of elder boys who, having no special reason for continuing science, or evincing no aptitude for it, are devoting their attention to literary or mathematical studies, or are undergoing preparation for some one of the too numerous examinations in arts which secure admission to the universities or "learned" professions. Very few of this latter class will have entirely evaded the meshes; nor, indeed, are there many schools in which it is possible for a boy to reach the upper forms without at least some systematic work in science divisions. Sixty-one per cent. then must be taken not as the percentage of boys who during their school career are taught science, but of those actually learning science *at the moment*. It would probably be not far wide of the truth to state that of those who pass through our public schools at the present time about 90 per cent. are compelled to take a longer or shorter course of science.

MASTERS.—The number of masters employed, in all subjects, including science, in the schools concerned is 1,011; giving the ratio of masters to boys as 1 : 14·5; out of this total, 112 masters are engaged (virtually) in teaching science only, whence it will be seen that the ratio here is 1 master to every 80 boys; but inasmuch as there are some 54 other masters giving help with the science classes, the ratio will be, perhaps, more fairly stated as about 1 : 70; and roughly out of every nine masters one is engaged solely in teaching science.

LABORATORY ACCOMMODATION.—A very satisfactory and encouraging feature brought to light by this inquiry is the recognition of the claims and importance of science by the governing bodies and other authorities responsible for the administration of finances. Laboratories and class-rooms specially designed and equipped for science teaching are the rule, and in nearly every instance where the present accommodation is inadequate we are informed that new buildings are being or are about to be erected. At least one chemical laboratory is found in every one of the 46 schools, and at least one separate physical laboratory in

45. Twelve schools provide two or more laboratories for chemical work, and 10 have two or more assigned to physics. These numbers refer only to large laboratories capable of accommodating whole sets of from 18 to 40 boys. There are, in addition, in many schools smaller laboratories in which a few more advanced students can work, as well as store-rooms, workshops for the laboratory servants, and rooms in which informal science connected with field or natural history clubs can be pursued. Mathematical laboratories are in existence at five schools (Charterhouse, Cheltenham, Eton, Victoria College, Jersey, and Winchester), biological laboratories at ten (Berkhamsted, King Edward's School, Birmingham; The Leys School, Charterhouse, Dulwich, Epsom, Eton, Felsted, Harrow, Wyggeston School), engineering laboratories at two (Dulwich and Oundle). A clear conception of the facilities afforded may be gained from inspection of Appendix I. attached to report.

SERVANTS AND ASSISTANTS.—In respect of laboratory servants, a large number of those responsible for school service have not yet realised the value and importance of employing at least one expert attendant. Thus only 18 schools have an assistant who is described as "trained," six of these being the fortunate possessors of two such servants. Six schools employ no special laboratory servants, but rely for cleaning on the ordinary servants, engaged also for other class-rooms, while in one the laboratory is kept in a proper state by the boys themselves—a practice which is highly to be commended. In the majority of the schools we find an assistant with one or more "boys" under him. The assistant is probably able to set up some experiments for lecture purposes and to make some of the simpler apparatus required, thanks to practice and the kind assistance of masters. But there is no comparison in value between such a man, however willing, and the expert who has served an apprenticeship in workshops and can use his hands skilfully and with knowledge of what is wanted. It may seem an extravagance to pay the £100 or £120 salary per annum to the skilled man, but, at any rate in large schools, it is a real economy, for much of the apparatus can then be made for the mere cost of the raw materials, and the repairs can be executed for a few shillings or pence on the spot. The saving that is thereby effected in the course of a year more than compensates for the difference in the wages of the really efficient assistant and the makeshift substitute who is too often deemed adequate.

THE EDUCATIONAL FACTORS OF IMPERIALISM.[1]

By the Rev. H. B. GRAY, D.D.
Warden of Bradfield College, Berkshire.

AMONG all civilised races and in all epochs of the world's history there has existed an inveterate belief that the particular age in which men live is fundamentally distinct from those that have preceded it.

Even in the most stagnant periods the illusion has prevailed that *the present day* is a period of flux and movement more or less organic, and as such either to be welcomed or to be deplored.

Notoriously difficult, however, as it is to gauge the temper of an age while we live in its midst, yet the phenomena in England at the beginning of the twentieth century seem so unmistakably marked that even a superficial thinker can hardly fail to recognise the spheres in which the symptoms of change and unrest are clearly operating. They are surely in these two—the sphere of education and the sphere of Imperial sentiment.

It may not appear inapposite, therefore, if, meeting as we do in this city of phenomenal growth and infinite enterprise, our thoughts were to be directed in my inaugural address on the science of education towards discovering what may be either called the Imperial factors in education, or conversely, and perhaps more properly, the educational factors in Imperialism.

It may be perhaps safely said in this great Dominion what might possibly be disputed in the academic groves of our ancient English universities, that there was no width of educational outlook within our own little island until the last thirty years of the nineteenth century.

The only strongholds of learning which presumed to give the lead to English secondary education were to be found on the banks of the Isis and the Cam. In these antique, I hesitate to say antiquated, fastnesses, the "grand old fortifying classical curriculum" was, until lately, regarded as the main, if not the only, highroad to educational salvation. They preserved, indeed they preserve to this day, almost the same entrance bars against admission to their thresholds as existed in pre-Reformation days. And, conformably with the pursuit of these ideal studies, the vast mass of their emoluments were, and still are, appropriated to the pursuit of the ancient models of education.

The result of this monopoly on the lower rungs of the educational ladder has been obvious, and, to a scientific thinker, lamentable. The curricula of the public secondary schools have been narrowed, or rather have never been widened coincidently with the development of new spheres of knowledge and enterprise. The students in those institutions have been dominated from above, for just as "where the carcase is, there will the eagles be gathered together," so where the emoluments have been, thither do the cleverest students concentrate their intellectual forces.

The ambition of the ablest boys has been inevitably and exclusively concentrated on a single line of study, and (as often happens in the minds of the young) other no less humane but entirely unendowed departments of human knowledge have been laughed down and despised. Opprobrious epithets, even, have been bestowed on the study of the natural sciences, while those modern linguistic achievements which opened the door to the treasures of French and German literature are still nothing accounted of in the great schools of England.

But (more marvellous than all) even the scientific acquisition of and familiarity with the literature of the mother tongue have been entirely neglected, because no room could be found for it in a time-table, three-quarters of which is confined for the great mass of boy students in the historic schools of England (whatever their tastes and capabilities) to the exclusive study of the grammar, literature, and composition in the languages of ancient Greece and Rome. And the particular methods pursued in this confined curriculum have rendered the course more straitened still. The acquisition of the literatures of the two dead languages and of the great thoughts buried with them has given place to a meticulous study of the subtleties of scholarship, and students are taught to wanton in the abnormalities of the words and phrases in which those literatures were enshrined, so that in the mind of the classical scholar the form has become, or at any rate became until quite lately, more important than the substance.

Nor is this all. Those who cannot find any stomach for

[1] An address delivered, as president, on August 26th, 1909, to the Educational Science Section of the British Association, at the Winnipeg meeting.

such drenching doses of mediæval learning are actually driven away prematurely as lost souls from those moss-grown seats of learning, which we acclaim as the great public schools of England; and, with moral characters only half-fledged, have either been condemned to the limbo of private tuition or sent as "submerged tenths" to find, or lose, their fortunes in the great dependencies and dominions of the Empire like that in which I am speaking to-day. There has been no serious attempt made until the twentieth century by the leaders of our best-known places of secondary education to discover the bents and aptitudes of the boys committed to their charge and to give them any educational chance if they have not possessed that particular kind of perception which could find its way through the subtleties of a Euripides or a Horace. Boys have been entirely denied the opportunity of showing their mental powers in any other sphere of learning. How many unsung Hampdens or mute, inglorious Miltons of mechanical genius have been lost to the world by the non-elastic systems prevailing (even now) in our best-known educational institutions, is a tremendous responsibility for conscientious trainers of the young to contemplate and atone for.

In how many, or rather how few, places of learning in England, at the present time, can the establishment of scientifically equipped carpentering and engineering shops be found in which a young mind which finds it impossible to digest the crude morsels of Latin and Greek grammar can find resource and development? In how few schools has the connection between mind and hand and eye been scientifically trained? Such establishments, even in the first decade of the twentieth century, can be counted on the fingers of one hand.

And yet, in spite of it all, the surprising fact remains —a fact which speaks volumes for the innate vigour and originality of the English race—that, out of the stream of young men which flows out annually from our public schools[1] and colleges, so many accommodate themselves as happily as they do to the startlingly new conditions which confront them when they pass over the seas and swell the tide of population in great centres of industry and enterprise such as that in which we stand to-day. Their educational vision, however, has had such a narrow and limited horizon that no wonder a large proportion are not very adaptable to the practical life of the prairie and the forest, or even of the counting-house and the office stool. Am I, or am I not, correct in hazarding the conjecture that many specimens of this really fine English breed from the old country come to you here in this Dominion without an elementary knowledge of the laws of the world in which they live, full of antiquated prejudice and tradition, derived principally from the straitened area of their island-home experience, so that not seldom they put their hand to the plough (either literally or metaphorically) and look back, becoming wastrels instead of forceful citizens in this ever-widening Empire? "No English need apply" has been, if I mistake not, written as a memorandum inside the breast of more than one leader of industry in this great continent, and small wonder is it when the cramping character of the ultra-mediæval training which our young men have received at some of our historical public secondary schools in England is taken into account.

What remedy (you may ask) have I to propose? My answer is this: I want to force upon the attention of English educationists certain Imperial factors which should occupy an indispensable place in the educational curricula of the great schools in the Mother Country.

I would give a prominent place to the scientific teaching of geography, and particularly to historical geography, with special reference, of course, to the origin, growth, and progress of the British Empire. Such a volume as the "Sketch of a Historical Geography," by Keith Johnston, should be placed in the hands of every boy, and be known by him from cover to cover. It can hardly be realised that in many of our great classical schools to this day not more than one, or at most two, hours a week are devoted to this subject, and that it is often not taught at all beyond the middle classes in a school.

Again, I would enforce an elementary knowledge of science on every boy who passes through the stage of secondary education.

I am aware that many hard things have been said about the teaching of science in secondary education. A learned professor, who is the president of another section of the association, has passed his opinion that, as taught in our schools, it has proved of little practical or educational value. But because the methods employed have been halting, insufficient, and unscientific, it by no means follows that it should be left out of the category of school subjects. On the contrary, it appears astounding that two-thirds of the public-school boys of England should grow to man's estate without even an elementary knowledge of the laws of the world in which they live.

Lord Avebury, in his presidential address at the International Moral Education meeting held in London last autumn, told his audience an amusing story of how, walking back one beautiful summer night from the House of Commons arm-in-arm with a leading luminary on the Government benches, his companion, who had been at Eton and Oxford, gazing at the great luminary in the heavens, pensively observed: "I wonder, my dear Lubbock, whether we shall ever know why the moon changes her shape once a week at least?"

To one who aspires to seek his fortune in the wide and half-unexplored continents of Greater Britain the value of the knowledge of chemistry, geology, botany, and arboriculture can hardly be overestimated. And yet many present here could bear critical witness to the fact that a large proportion of young men go out to the North-West totally unequipped, after their public-school training, with even the most elementary knowledge of those departments of science to which I have alluded. No wonder, again, "No English need apply." Every youth we export to you ought educationally to bear this label on his back: "Every seed tested before being sent out."

But above and beyond all there should be brought into the foreground a co-ordinated study of English language and English literature. Nothing impressed me more in my visit to the United States in 1903 as one of the Mosely Commission than to observe how greatly the cultivated classes in the Federation outstripped our island-bred people in the facility and power with which they manipulated the English tongue. Awkwardness, poverty of expression, and stammering utterance mark many Englishmen of high academic distinction. But the American who, on account of the incessant tide of immigration, has to assimilate the congeries of all the nations of the earth in the shortest possible space of time, has so co-ordinated the study of his ancestral tongue in the schools of his country, that the pupil emerges completely equipped for the use of persuasive and oratorical

[1] It should be noted in the forefront of this address that the expression "public schools" is used throughout in its English (not in its more proper and American) sense—*i.e.*, as the educational centres of the upper classes.

language wherein to express his thoughts and wherewith to gain his ends.

In connection with this, may I add that it was indeed a happy augury that, at the eve of the meeting of the British Association in this great Dominion, there should have been a gathering of delegates of the Imperial Press in the centre of our small island home? "Little they know of England who only England know." The phenomenal, or rather abysmal, ignorance of the geography and of the vastness of the productive power of the British Empire which exists among the upper and middle classes in England would be ludicrous if it were not so deplorable. The loyalty and devotion of the Colonies, right unto the utmost corners of the earth, admit of no dispute. It is observable on every hand and in every national crisis. The doubt is of the loyalty of the centre of the Empire towards its extremities, through the crass ignorance which exists as to the geographical and political meaning of that Empire. I would annihilate that ignorance, as aforesaid, by putting political, historical, and physical geography in the forefront of our educational system; by lectures from your able men in Canada, or Australia, and South Africa, vivified by lantern-slides, and encouraged and endowed by the Mother Country. I would bring all visible means of presentment to bear on the education of childhood, boyhood, and youth in the Motherland.

Let me touch on one further educational factor of Imperialism. The sentiment of patriotism, unlike that of charity, is not equally capable of indefinite intension and extension. The peculiar system of education which finds vogue in England in most of our greatest institutions—the institutions from which are drawn the future leaders of the nation—is, as everyone knows, the barrack system, otherwise called the boarding system. It is not the time or place here to enlarge on the obvious advantages of that system, its unique characteristics, its power of moulding character and developing enterprise. But it has its cramping and confining side—it has a tendency to localise patriotism, to narrow a young man's mental horizon, and to ignore whatever lies outside its immediate survey. Hence the abnormal and gladiatorial devotion to games and comparatively selfish amusements, which absorb, and, in my opinion, not seldom paralyse and stifle wider, more generous, more enlightened—in fine, more Imperial instincts. However much in the field of sports the individual youth may subordinate his own self-regarding impulses to the welfare of the tiny community for which he is exercising his energies, his horizon is not wide enough to bid him rise to a sentiment of self-sacrifice and self-abandonment on behalf of a greater and more abstract ideal—love of Fatherland and loyalty to Empire.

But it is a welcome thing to be able to point to a larger sentiment lately awakened in this direction. There is no doubt that the patriotic spirit in our schools and colleges has, from whatever cause, received a great impetus in the last two years, and that the general principles of an intelligent defence of our shores from foreign aggression have been taught and construed into terms of scientific training and co-operative action with a rapidity equally surprising and welcome to those who, a few years ago, looked with something more than apprehension on the supineness of the youth of England in all patriotic regards.

"The flannelled fool and muddied oaf,"

though they have not yet received their quietus, have been less rampant lately in our educational institutions, and something like an Imperial instinct, born of increasing knowledge both of the glory and dangers of our vast Empire, has, at least in the more cultured classes, taken the place of apathy, disregard, and ignorance. In hours formerly lavished to an abnormal extent on trivial amusements, and even in hours hitherto devoted to more academically intellectual training, we find young men in our schools and colleges now with arms in their hands, shooting, signalling, scouting, and studying scientifically the art of defensive warfare. This, at least, is "a beam in darkness, of which we pray that it may grow."

Time and your patience will not allow me to touch on more than the fringe of the great educational problems which have to be solved before we can approach in English education to what I venture to call the ideal of Imperial responsibility.

In criticising the old mediæval system of education which prevailed in England until comparatively recent years, and still has far too great a hold on the more venerable and important institutions of our island home, I would not have you suppose that I am an advocate of a complete, or even approximately complete, basis of utilitarian education. It is an easy charge for those who desire *stare super antiquas vias* to throw in one's teeth. I have little hesitation in expressing my belief that the time has come (and I speak as one whose training was that of a classical scholar, for I was brought up in the straitest sect of academical Pharisees)—I say I have no hesitation in expressing my belief that the time has come, not only that the study of the two ancient languages should be reduced to one for all except scholastic specialists, but also that both should yield pride of place in our educational system to the claims of English, modern languages, mathematics, natural science, and, not least, manual training, so that our young men should be fitly equipped to put their hand to any work which may confront them amid all the complex problems and critical situations to be found within the world-wide boundaries of the British Empire.

Germany, France, and the United States have been beforehand with us in the working out of such a reformed system of education. I am by no means one of those who believe that we should be wise in copying the methods in their entirety of any of these three peoples in their educational methods. Undoubtedly in all three there has been a more organised connection between the actual teaching given in their respective schools and the industrial, social, and political needs of the respective peoples. But no one nation is exactly like another nation in its temper and genius, and I should be sorry to advocate, for instance, the highly organised system of State education in Germany, under which it could be predicted to a certainty that boys and girls in every secondary or primary school on any given Friday morning should be studying (say) the geographical importance of Natal or the outlines of the coast of Lincolnshire. There must be many educational differences, because the idiosyncrasies of each nation differ from those of another, and I do not think we need ever fear that our intrinsic individuality will be crushed into any Teutonic cast-iron mould or ground down beneath the heel of some bureaucratic educational despotism. But that we ought to change our ways still more than we have, and adopt saner educational models, many searchings of heart through a long educational career have gradually, but overwhelmingly, convinced me. If we are apt to think, speak, and act Imperially, our education must take form from a strong Imperial sentiment, and must aim at instilling Imperial instincts in the young lives which that education is meant to control and develop.

I have spoken hitherto of this subject mainly from the point of view of secondary education, with which I am the most conversant; not only for that reason, however, but because most of those who are destined to proceed to the distant outlying parts of the British Empire, and, when there, to take prominent parts in the development of that Empire, obtain their educational equipment from the secondary schools of England. It is, therefore, on curricula offered or desiderated in them that I have exclusively dwelt. But I do not blink the fact that the proper educational organisation of our elementary schools on one hand, and of our universities on the other, exercises a large influence on the solution of Imperial problems.

On elementary education, however, I do not propose to touch in this address, mainly because I look forward to experts in primary schools directing the thoughts of this association more directly to them. But I will touch with great brevity on the subject of university education.

Whether Oxford and Cambridge—particularly Oxford—will ever so reform themselves as to contribute largely to such solution remains to be seen. Personally, I look with far greater confidence to the more recently organised universities—those of London, Leeds, Sheffield, Manchester, and the like—to equip men educationally with those moral, physical, and intellectual qualities which are most in requisition in our great dependencies and commonwealths.

Such institutions, from their newness, their eagerness, their freedom from antiquated prejudices and vested interests, are more likely to be counted upon for many years to come to send forth a stream of young men who have learned in the school of hardness to face the difficulties and to adapt themselves to the austere conditions which are inseparable from life in unworked regions and half-discovered continents. And it is at once a hopeful and inspiring thought that the great Dominion of Canada will welcome such to herself as sufficient and efficient citizens of her all but boundless territories, that she will recognise in them "bone of her bone and flesh of her flesh," physically, mentally, and morally capable, in company with those of her own sons who have long settled in the land, of extending the borders of the Empire by enlarging its resources, and of lifting, securing, and consolidating thereby the destinies of the Anglo-Saxon race.

There is still one more educational factor on which I would ask attention before I close this address. It is this—the necessity of a closer touch educationally (in the sense of "academically") between the secondary schools and colleges of the Mother Country and similar institutions in the great Dominion and commonwealths which own her parentage. How this can be effected without great modification of our existing English system it is hard to see. But one point is quite clear. We must give up that part of our system which insists on choking the passage of the student from point to point in his educational career by subjecting him to countless examinations on entrance and throughout his academical course. It would be of incalculable advantage to the Empire at large if an extension of educational intercommunion, such as was inaugurated by the noble benefactions of the late Cecil Rhodes, could be secured throughout the Empire. Undoubtedly examination would be the surest test for determining the question of the admission of a student to the privileges of further education if such examination could be conducted within a limited geographical area. But it is quite an impossible system if adopted as between the outlying parts of a great empire. The United States of America have taught us a better way. For instance, in the State of Minnesota, the university has legislated that if and when the principal of a high school of recognised position certifies that a student has successfully pursued for a specified length of time those studies in that high school that would entitle him to admission to the university, he should be admitted thereto without further delay or hindrance. What a paralysing curse the Charybdis of examination has been to all true learning only those who have suffered from it for thirty years can bear adequate testimony. It would be one of the most fertilising sources from which to secure good and progressive citizens if, instead of admitting within her borders all or any who came of their own spontaneity or from compulsion (leaving their country, perchance, for their country's good), the Government authorities in the Dominion could get into closer touch with the educational authorities of the Mother Country, who would act as guarantee that the material sent out by the Mother Country should be of an approved and first-rate quality. This might be worked on the American "accredited-school" system, under which the authorities of the school sending the pupil should feel the *maximum* of responsibility in recommending his admission to the academical, or the technical, or the industrial organisations existing in the Dominion.

Since penning the first sentences of the above paragraph last June my eye has been caught by a notice which appeared in the columns of the *Times* on the 28th day of that month while I was engaged in the very act of correcting the proofs of this address; but I prefer to leave the paragraph written as it stands, as the notice in question is an eloquent commentary on my suggestion of educational intercommunion.

I may, perhaps, be allowed to read the extract from the *Times verbatim*, though it may be familiar to some at least among my audience. It is headed "International Interchange of Students—a New Movement."

"We have received," says the *Times*, "the following interesting particulars of a new educational movement to provide for the interchange of University students among the English-speaking peoples.

"The object is to provide opportunities for as many as possible of the educated youth of the United Kingdom, Canada, and the United States (who, it is reasonable to suppose, will become leaders in thought, action, civic and national government in the future) to obtain some real insight into the life, customs, and progress of other nations at a time when their own opinions are forming, with a *minimum* of inconvenience to their academic work and the least possible expense, with a view to broadening their conceptions and rendering them of greater economic and social value, such knowledge being, it is believed, essential for effectual leadership.

. . . . . .

"The additional objects of the movement are to increase the value and efficiency of, as well as to extend, present University training by the provision of certain Travelling Scholarships for practical observation in other countries under suitable guidance. These scholarships will enable those students to benefit who might otherwise be unable to do so through financial restrictions. It also enables the administration to exercise greater power of direction in the form the travel is to take. In addition to academic qualifications, the selected candidate should be what is popularly known as an 'all-round' man; the selection to be along the lines of the Rhodes Scholarships.

"The further objects are to extend the influence of such education indirectly among the men who are not selected

as scholars (through intercourse with those who have travelled) by systematic arrangements of the periods' eligibility while they are still undergraduates.

"To promote interest in imperial, international, and domestic relations, civic and social problems, and to foster a mutual sympathy and understanding imperially and internationally among students.

"To afford technical and industrial students facilities to examine into questions of particular interest to them in manufactures, &c., by observation in other countries and by providing them with introductions to leaders in industrial activity.

"To promote interest in travel as an educational factor among the authorities of Universities, with a view to the possibility of some kind of such training being included in the regular curricula.

"To promote interest in other Universities, their aims and student life, the compulsory physical training, and methods of working their ways through college, for example, being valuable points for investigation.

"To promote international interchange for academic work among English-speaking Universities; and, in the case of the British Empire, to afford facilities for students of one division to gain, under favourable circumstances, information relative to the needs, development, and potentialities of other divisions: and to promote an academic interchange of students among the Universities of the Empire.

"As already indicated, there is a widespread interest in the movements so far as the United Kingdom is concerned; while in Canada and the United States there is also a widespread recognition of the value of the scheme; and although committees have not been actually organised there as in this country, a very large body of the most prominent educationists are strongly in favour of the plan, and have promised their co-operation if the scheme is financed.

"It is proposed to establish two students' travelling bureaux, one in New York and one in London; an American secretary (resident in New York) and a British secretary (resident in London), both of whom shall be college men appointed to afford every facility to any graduate or undergraduate of any University who wishes to visit the United States, Canada, or the United Kingdom for the purpose of obtaining an insight into the student, national, and industrial life of those countries. The bureaux will undertake the work of providing information relating to United States, Canadian, British, and other English-speaking Universities for the use of students, undergraduates, and others. They will also provide information relating to educational tours of any description in English-speaking countries, and the arrangement of tours suitable to the needs of the inquirer with a view to his obtaining the greatest facilities for education with a *minimum* of expense. Furthermore it will be their duty to provide information as to the best places for the study of educational, governmental, industrial, and social problems in the United States, Canada, the United Kingdom, and other parts of the Empire, as well as to provide introductions to leaders in the above-named spheres of activity, besides undertaking the organisation and conduct of special tours for educational purposes, if necessary.

"It is proposed to provide 28 travelling scholarships, 14 of these being available for Universities in the United Kingdom, 10 for Universities in America, and four for Universities in Canada. The arrangements will be controlled by general committees, one for the United Kingdom and one for Canada and the United States, unless it is found necessary to inaugurate a separate committee for each of the latter."

You will observe, then, that a scheme which I had ventured to suggest as being "of incalculable advantage to the Empire" had, before I wrote the words quoted, been advocated entirely without my knowledge by a body of influential educational leaders in England, whose names were appended to the notice which I have read; and I need only add that it is quite certain that I am interpreting the sentiments of all here assembled in wishing God-speed to the development of the scheme, which seems likely to prove, if carried into effect, a great, if not the greatest, educational factor of Imperialism.

But it may be objected here, Is not your own horizon circumscribed? Why should educational ideals be limited, even by so extended a conception as Imperialism? Should not the ultimate aim of all education be, not the federation of one race only, but the federation of the world at large—the brotherhood of man?

I am not concerned to deny that such a lofty conception is the true end of all physical, moral, and mental training.

But if the master mind of a Milton was content to define true education to be "that which fits a man to perform justly, skilfully and magnanimously all the offices, both public and private, of peace and war," it may well suffice us if we extend our (at present) too narrow conceptions (the aim of which seems to be the cultivation of a mere island patriotism) to a sphere which has for its end the imperialistic sentiment of a whole race.

It may, indeed, be well doubted whether a race-sentiment is not an ultimate factor beyond which it is impossible in an imperfect world to go. Universal philanthropy in its most catholic sense is a sentiment which the limited conditions of the earth's surface seem to render impossible. So long as men's ambitions are an unlimited quantity, and so long as the habitable globe remains, as it ever must remain, a limited quantity, so long will the populations of the world be continually liable to shifting movements and frequent dislocations. Practical educationists, then, must inevitably confine the scientific consideration of aims and methods in education to the development of the highest interests of their race rather than of mankind at large.

And that being so, the last point on which I would insist in dealing with the educational factors of Imperialism is to emphasise the importance of what the educationists of the United States call "civics" as the binding power which should fasten together all the separate educational faggots in any Imperial scheme of education—the duty of personal service to the State, the positive obligation which makes us all members incorporate in one Imperial system. In our love of individual freedom, in our jealousy of interference with our individual liberty of action, in our insular disregard and depreciation of intellectual forces working in our sister communities beyond the seas, we have lost sight of this civic responsibility which has ever lain on our shoulders and from which we can never dissociate ourselves, so long as our Empire remains as part of our ancestral heritage.

It is this positive duty towards each other and our race beyond the seas which those who live in our island home have been slow in realising, and it has been a real blot on our educational system that such ideas as Imperial responsibility and Imperial necessities have not been inculcated in the young people in our schools and colleges. As an illustration, I may observe that it has been even debated and doubted in some responsible quarters

in England whether the Union Jack should wave over our educational institutions on the days of national festivity and national observance.

To sum up. By these and other kindred means I would urge a closer educational touch between the Mother Country and the Empire at large.

Long ago a great Minister was able to say: "Our hold of the Colonies is in the close affection which grows from common names, from kindred blood, and from similar privileges. These are ties which, though light as air, are strong as links of iron."

But times have changed. To-day we are confronted with the problems of a vast and complicated Empire—great commonwealths, great dominions, sundered from each other by long seas and half a world, and however closely science has geographically brought them together, we cannot in soul and sympathy, nor ultimately in destiny, remain attached, affiliated as mother and children should be, unless we grapple to each other and understand each other in the greatest of all interests—the educational training which we give to our children in the one part of our Empire to make them suitable citizens in another.

In suggesting reforms and modifications in which this educational unity may best be expressed, forgive me if I have but touched, and touched inadequately, on the fringe of a great subject, the transcendent importance of which it requires no elaboration of mine to impress on the earnest attention of the people of this great Dominion—which great Dominion may I be allowed to salute, without flattery or favour, as the most favoured by natural beauty and by virgin wealth of all the children of our common Motherland? May I salute her in terms which formed the old toast with which the two greatest of our English public schools, Winchester and Eton, pledged each other when we met in our annual cricket contest: *Mater pulchra, filia pulchrior!*

MENTAL AND PHYSICAL FACTORS INVOLVED IN EDUCATION.[1]

THE committee has during the year been engaged in a preliminary inquiry as to the nature of the work that is at present being carried on, and as to the chief centres of activity.

The problems of education and instruction have been the subject of experimental inquiry of a sporadic kind during the whole of the nineteenth century, beginning with the work of Pestalozzi in Switzerland, who, in spite of defective equipment as a psychologist, endeavoured to lay the foundations of educational practice upon established facts of mind. He aimed at the discovery of formulæ, psycho-physical laws, as he called them, upon the basis of which text-books of instruction might be written, and also advocated the establishment of institutions of pedagogical research, and of experimental schools for which Kant himself had pleaded in still earlier days.

The connection of universities with the problem goes back to the middle of the eighteenth century, when first Gesner and then Wolf established discussion classes for future schoolmasters in connection with their chairs. It was Herbart, however, who, during his tenure of the chair of philosophy and pedagogy in Königsberg, made the *Pädagogisches Seminar* an essential feature of a German university, and a pupil of his, Stoy, founded what is still the most famous school of pedagogy in Europe, if not in the world. For a time the reputation of another Herbartian, Ziller, made that of Leipzig still more important; but Ziller's death led to the abandonment of the most essential feature of such a seminar from the Herbartian point of view, viz., the *Übungsschule*. The University of Jena is now the only German university which maintains a permanent school in which the teaching of the professor of education may take a concrete shape, and where experimental work may be carried out.

In America and in England such schools have been established more or less on the Jena model. In Chicago an experimental school was established under the direction of Prof. Dewey, and in England, thanks to the generosity of a private donor, the University of Manchester has been able to place the Fielden Demonstration Schools on a permanent footing. Important accounts of work done have issued from both these schools.[1]

Schools of this kind have usually been regarded as providing a field in which the general principles of education as taught by the professor might take practical shape, not with the idea of attaining finality, but rather of showing ways in which principles might be applied, and of inspiring the students to fresh and varied effort in the application of them to the conditions of the ordinary schools. The existence of the school has naturally had a far-reaching effect upon the teaching of the professor, who finds contact with reality a never-failing source of suggestion, as well as a testing-ground for the adequacy of his theories. In the main the problem of these schools is one of organisation in accordance with clearly conceived principles; their function is, on one hand, to inspire students with a sense of the importance of basing teaching procedure upon rational grounds, and, on the other, to discover the necessary compromise between principles more or less abstract in character and the necessities of the practical situation.

Thanks very largely to the progress which has been made in experimental psychology, these schools are already in some cases serving a new cause, viz., the effort to base educational theory and practice upon ascertained facts in the physical and mental development of the child. It is difficult to appraise the work so far accomplished, but the committee has satisfaction in reporting that wide interest has been already roused, and no mean volume of work has been placed upon record. It hopes to deal with the subject in a later report.

Recognition is due to those experimental psychologists who, as individuals, have taken up this aspect of mind research, and contributed largely to securing the recognition of its importance. Amongst such men, Profs. Binet and Henri in France, Prof. Claparède in Switzerland, Prof. Meumann and Prof. Stern in Germany, Prof. Van Viervliet in Belgium, Prof. De Sanctis in Italy, Prof. Stanley Hall in America, take a leading place. Whilst their methods differ fundamentally, all these gentlemen are experimental psychologists who have devoted themselves to inquiries of the greatest importance to the teacher.

In addition to the special interest of these particular professors, numerous institutions of a more permanent character have been set up in university and other centres. The Municipality of Milan has housed and endowed an "Institute of Experimental Pedagogy," under the direction of Dr. Ugo Pizzoli. The work of this institution was for a time recorded in its own journal, *Bollettino di Pedagogia*

[1] Interim report of the committee, consisting of Prof. J. J. Findlay (chairman), Prof. J. A. Green (secretary), Profs. J. Adams and E. P. Culverwell, Mr. G. F. Daniell, Miss B. Foxley, Prof. R. A. Gregory, Dr. C. W. Kimmins, Miss Major, Dr. T. P. Nunn, Dr. Spearman, Miss L. Edna Walter, and Dr. F. Warner. Sir E. Brabrook, Mr. T. Loveday, Dr. Slaughter, Mr. Bompas Smith, and Mr. Twentyman have been co-opted upon the committee.

[1] The *Elementary School Record*, University of Chicago Press. The *Demonstration Schools Record*, University Press, Manchester.

Sperimentale. The city of Antwerp maintains a paidological laboratory under the direction of Dr. M. C. Schuyten, who, in addition to the series of year-books regularly issued from his laboratory, is also responsible for researches which have been published in the *Bulletins de l'Académie Royale de Belgique*, *Archives de Psychologie*, &c. In Leipzig, the teachers of Saxony have founded, out of their own funds, aided by a State subvention, an *Institut für experimentelle Pädagogik und Psychologie*, with Privatdozent Dr. Brahn as its director.

The Russian War Office, curiously enough, has since 1904 maintained a laboratory for experimental psychology, with special reference to pedagogical questions. Here investigations are conducted and courses are delivered to audiences of teachers. The laboratory is now united with the Academy of Pedagogy, which was opened a year ago. Only students who have already graduated at some university are permitted to attend the courses. The Education Association of Moscow has opened a psychological laboratory, and the *Psychopädologisches Institut* of St. Petersburg has undertaken an "all-round" investigation of the daily progress of a number of children from birth to their twenty-first year, and upon the basis of observed facts it is proposed to fashion their education.

In Budapest, a State institution for research in this field was established in 1906, under the honorary direction of Dr. Ranschburg. It originated out of an effort to base the education of defective children upon a more scientific diagnosis of their condition, and its work now includes the investigation of the mental development of normal as well as of abnormal children.

In France, Binet's interest has led to the foundation of a laboratory in close connection with a Paris elementary school in which the investigation of children's capacity and its development, both physical and mental, is continuously carried on.

In America, the psychological laboratories of the Clark University, under the guidance of Drs. Stanley Hall and Sanford, and of the Columbia University of New York under Dr. Cattell, are good examples of the tendency of the experimental psychologist to pursue problems genetic in character.

In addition to these institutions, attached for the most part to universities, a number of societies for the scientific study of children have been active in recent years. Amongst these may be mentioned the following as typical:

La Société libre pour l'Etude psychologique de l'Enfant, which, besides showing an interest in the work that is being done in various centres, actually itself undertakes inquiries into problems of genetic psychology.

The *Child Study Society* of our own country, which is a federation of Child Study Societies in London and several large towns, publishes a quarterly journal, the *Child Study*; and, though somewhat different in character, the

Institut für angewandte Psychologie und psychologische Sammelforschung, of Berlin, which aims at becoming a centre of information for all interested in any branch of applied psychology.

As a further mark of the present-day importance of the work which the committee has undertaken to investigate and report upon, we may note the great number of journals which are now largely devoted to the subject.

In addition to those already mentioned, there are in Germany:

Zeitschrift für experimentelle Pädagogik (Meumann);

Zeitschrift für pädagogische Psychologie, Pathologie und Hygiene (Kemsies);

Zeitschrift für Kinderforschung (Koch, Trüper, &c.);

Pädagogisch-psychologische Studien (Brahn);

Zeitschrift für angewandte Psychologie und psychologische Sammelforschung (Stern);

Sammlung von Abhandungen aus den Gebiete der pädagogischen Psychologie und Physiologie (Ziehen und Ziegler);

Pädagogische Monographien (Meumann);

in France:

Année Psychologique (Binet);

Bulletin de la Société pour l'Etude psychologique de l'Enfant (Boitel);

in America:

Psychological Clinic;

Pedagogical Seminary;

besides others in the Italian, Swedish, Spanish, Russian, and Japanese languages.

It is impossible in this report to put on record the many important experiments which are being carried out in schools in America, London, and elsewhere. These are isolated, and the committee has not yet been able to get full information about them.

The value of the work that has been done cannot, of course, be measured by its volume. Some portion of it has probably little permanent value, because it has been done by persons who are not adequately trained psychologists or are not competent educational practitioners. The committee feels with Dr. Spearman that "the great need of the moment is the procural of facilities for research and the training of persons to direct it." They would in this connection point out the need for public assistance. It is a new and important branch of research for which few, if any, British institutions are adequately equipped. It therefore asks the Sectional Committee to propose to the Committee of Recommendations that the Council of the Association should be authorised to organise a deputation to the Board of Education urging the need of financial aid to departments of education in universities and other higher institutions of learning, for purposes of research.

HISTORY AND CURRENT EVENTS.

"THE Omnibus—Name and Thing" would be a good subject for a magazine article, or possibly some day for a treatise. The institution is scarcely more than eighty years old, having been inaugurated in Paris in 1828 and introduced into London the next year. "Omnibus" (for all)—who invented this modern use of a Latin word? and how long was it before polite people allowed themselves to use the popular contraction of it now so well known? And what will our future dictionary makers tell of the origin of the compounds now on everyone's lips, "motor-bus," "electro-bus," &c.? Our grandfathers had a joke on the original use of the word, "omnibus—for all, who can pay sixpence," for that was the lowest fare at first. And now the Londoner has almost lost the use of his feet, so cheap is it to travel even short distances through the city or to the suburbs.

THE first omnibuses were scarcely regarded as rivals to the other method of conveyance which was almost contemporary with them in its inauguration, that known popularly as "railways." The death has recently been announced of a man who is described as "the first clerk engaged by the first manager of the London and North-Western Railway," so that both institutions have come into existence within the memory of men still living. Not only are they contemporary, but they may, in their recent

developments, be said to have had a common origin. A reference to Samuel Smiles's "Life of George Stephenson" will show that the first use of steam in traction was intended for use on common roads, not on railways. And now these "failures" of the eighteenth century have revolutionised our social life, not only in town, but in country, in ways both pleasant and unpleasant.

IN the 'sixties and 'seventies of the eighteenth century the Whig lords and the House of Commons that they elected had two enemies, the "Patriot" King George III. and the people of the country at large, now beginning to rise into commercial importance, and wishing at least to know what was going on in the Legislature. From the second of these enmities arose the conflict which ended in the reporters to the Press gaining what was almost a "right" to be present at the discussions. And now, after more than a century has elapsed since those memorable conflicts, what is the result? That the great majority of our newspaper readers care nothing for the debates, but regard the doings of the House of Commons merely as one more source of "incidents" which serve to diversify the dullness of their ordinary existence. "Parliament"—the talking-thing—has ceased, for the majority of us, to justify its name. It has become only the machine for registering the decisions of those whom it indirectly elects and who decide on the policy of the country.

THESE "incidents" have been increased lately by the behaviour of a class of the community who wish to enter into the body politic, instead of being satisfied, as most of them have been hitherto, with influencing the course of legislation from outside. The women are adopting the method often used in past times by those who have desired political power, but have had no other means of gaining it—that of breaking, or at least appearing to break, the law which hinders them in their progress. Like the Quakers in their opposition to Acts of Uniformity and to the requirement of oaths, like some of those who in 1831–2 desired the passing of the Reform Bills of those years, like Bradlaugh in his struggle with the House of Commons, they are using both passive and active resistance to the law as it is at present in order to gain a change in that law. Such is still, apparently, "the only way" to effect changes in a constitution, whether under despots like Eglon, King of Moab, or under democracies like that of the United States of America in the days of slavery. It is still necessary that John Brown should die lest the whole people perish.

ITEMS OF INTEREST.

GENERAL.

AT the meeting of the British Association in Dublin last year the Committee on Anthropometric Investigation in the British Isles was reappointed to act as an organising centre to promote the establishment of anthropometric investigation among all classes of the population of the British Isles. In this direction important work has been done during the past year. In October last Mr. J. Gray, the secretary, at the request of Dr. Rawson, the principal of Battersea Polytechnic, instructed his medical officer in the method of carrying out measurements in accordance with the committee's scheme. The importance of installing anthropometry in public schools was brought under the notice of the Headmasters' Conference on February 10th last, and their co-operation was asked for. In reply, a letter, dated May 21st, was received from the secretary of the Headmasters' Conference Committee, suggesting the issue of a short circular explaining the items of information that it was most important to collect. In response to this suggestion a memorandum was drawn up and sent out by the Anthropometric Committee to the headmasters of 107 public schools. It is hoped that this action will result, in the course of time, in the general establishment of anthropometry in public schools. Measurements are now being carried out, generally under the direction of the medical officers of the education authorities, in primary schools and in a certain number of provided secondary schools. But there is still a wide field among secondary schools for both boys and girls in which the committee could do good work. The 1908 report of the committee on anthropometric method has been issued as a separate publication by the Royal Anthropological Institute (price 1s. net). This will make the scheme of the committee available, in cheap and convenient form, to all who propose to undertake anthropometric work, and will ensure the uniformity which is so essential to make the results of different measurers comparable.

IN opening, during the recent holidays, the summer vacation school established by Mrs. Humphry Ward at the Passmore Edwards Settlement in Tavistock Place, London, Mr. Trevelyan, M.P., said that when the vacation schools were first started in New York the humble sum of £2,000 was given by the city to encourage them, and now in New York there are 88 playgrounds for eight of the holiday weeks of the year, there are 500 teachers looking after them, and between 70,000 and 80,000 children attend the vacation schools. Such schools supply a great social need. If all the poor children of London could be taken into the country no doubt the children would amuse themselves in the fields among the cows. But they cannot. The Poor Children's Country Holiday Fund sends 40,000 poor children from London into the country every year. Probably three-quarters of a million of children are left who cannot get away. They pass their holidays in the streets or on the staircases of block dwellings, because the playgrounds are closed, as well as many of the squares. The way in which the children of our big towns have to spend their leisure has a very potent influence in creating the criminal classes. If the authorities would spend a little on vacation schools they would diminish the amount which has to be spent on the criminal part of the population. Mrs. Humphry Ward realised a great truth when she set the children in their play hours to useful occupations such as basket-work, wood-work, cobbling, drill and gymnastics, cookery, clay-modelling, and the like. The proof that she was right is shown by the zest with which the children take to it, and the fact that the attendance at her vacation school is something like 80 per cent. of the children who put down their names. Mrs. Ward spoke later of the lavish support which is given to the movement in the United States. Chicago has spent a large sum on the provision of small parks and open spaces, in every one of which there is an organised playground for children. The movement for organised playgrounds is spreading all through the States with extraordinary rapidity.

THE report (Cd. 4791) of the Inter-Departmental Committee on Partial Exemption from School Attendance marks an advance in the state of public opinion. The terms of reference to the committee were: (i) To inquire into and report upon the extent to which existing enactments relating to partial exemption from compulsory school attendance are taken advantage of in urban and

rural areas in England and Wales; the occupations in which children so exempted are employed; and the effect of such occupations upon the general education and industrial training of the children. (ii) To consider the practical effects of legislation providing for the abolition or restriction of half-time employment upon industries and wage-earning, and upon educational organisation and expenditure. (iii) To report whether, and to what extent, in view of these considerations, it is desirable to amend the law by raising the age at which partial exemption from attendance at public elementary schools is to be permitted, or by raising the minimum age for total exemption concurrently with affording facilities for partial exemption. After an exhaustive inquiry, during which fifty-two witnesses, representing the opinions of most societies and persons familiar with the various aspects of the problem, were examined, the committee decided upon the following recommendations: (*a*) that all partial exemption be abolished from a date not earlier than January 1st, 1911; (*b*) that, at the same time, total exemption under the age of thirteen be abolished; (*c*) that the attendance certificate for total exemption be abolished; (*d*) that total exemption at the age of thirteen be granted only for the purposes of beneficial or necessary employment; (*e*) that the ordinary condition for total exemption be due attendance at a continuation class, but (*f*) that, subject to the approval of the Board of Education, an authority may adopt as an alternative condition the passing of a standard not lower than Standard VI.; (*g*) that nothing in any new legislation shall affect any children who at the date on which it comes into operation are partially or totally exempt from attendance at school under the bye-laws previously in force.

In the essay competition for the Lord Meath Empire Day challenge cups and League of the Empire prizes next year the following subjects have been prescribed. For secondary schools the subject will be "The Improvement of Communication between the Different Parts of the British Empire: its Political and Social Effect." A silver challenge cup, value £10 10*s*., presented by the Earl of Meath, to be held by the school, and a personal prize of £5 5*s*., given by the League of the Empire, are offered for competition among the secondary schools of the Empire for an Empire Day essay not exceeding 2,000 words. The age limit here is fourteen to eighteen years. For primary schools the subject will be "The Influence of the Different Climates of the Empire upon Domestic and Social Life." A silver challenge cup, value £10 10*s*., presented by the Earl of Meath, and a personal prize of £3 3*s*., given by the League of the Empire, are offered for competition among the elementary schools of the Empire for an Empire Day essay not exceeding 1,000 words. The age limit here is under fourteen years old. Further particulars may be obtained from the League of the Empire, Caxton Hall, Westminster, S.W.

The third International Congress of School Hygiene is to be held in Paris in 1910 during Easter week, namely, from March 29th to April 2nd. All civilised countries have formed committees and have promised to send representatives. There will be three general discussions and thirty papers read by French and foreign contributors. Full information can be obtained from the general secretary, M. Dufestel, 10, Boulevard Magenta, Paris.

Two papers read before the Manchester Conference of the Child Study Society in May last, and printed in the July number of the journal of the society (Edward Arnold, 6*d*.), should do much to vindicate the value of investigations of child psychology. Prof. Findlay speaks truly when he says that the value of this or that subject as an educational instrument at any stage should not be decided by reference to personal opinion or tradition, but by the results of scientific investigations of mental development. Advocates of particular departments of learning have endeavoured hitherto to mould the child's mind according to their personal ambitions, but the Child Study Society, of which Prof. Findlay is president, aims at making the child's mind itself the basis upon which all plans for the upbringing of children must be built. The paper by Prof. J. A. Green upon the study of types in the mental life of children is an instructive summary of methods adopted and results obtained in directions indicated by his recent articles in The School World. Scant encouragement is given to work of this kind in our country, yet there can be little doubt that only by systematic inquiries into mental condition and development can a sound system of educational procedure be discovered. At present the child is the victim of various schools of thought, and the subjects prescribed for study are more or less matters of haphazard decision, but the future must bring into being a system in which every part of the curriculum has a definite purpose and is applied at the most suitable stage of mental development.

The Journal of the Association of Teachers in Technical Institutions for July last contains an abundance of useful matter. It is quite clear that the association is at work with all the vigour of early youth. The magazine includes the president's address at Liverpool this year, which has been reported in these columns already (p. 265), and addresses by Mr. A. Galbraith and Dr. Robert Pohl. Articles on subjects of technological importance have been contributed by prominent members of the association, and full particulars of the meetings of the various branches of the association are also included. The number concludes with a useful list of vacancies in technical institutions. The Journal is published by the St. Bride's Press, Ltd., and its price to non-members is one shilling.

Science Progress, beginning with the present issue (No. 13, July, 1909), is edited by Prof. H. E. Armstrong, F.R.S., Prof. J. Bretland Farmer, F.R.S., and Mr. W. G. Freeman. It commences with an essay entitled "Oxford on the Up Grade," in which the present examination and scholarship systems are criticised freely, and the hope is expressed that in the future the student will go to the University with the object of acquiring ideas and the scientific habit of mind rather than mere technical proficiency. Prof. Sollas continues his fascinating series of articles on Palæolithic races and their modern representatives, the present account dealing with Magdalenian man and the Eskimo. Dr. J. H. Parsons discusses the deleterious effects of bright light on the eyes, and advocates caution in the use of lamps which emit light rich in ultra-violet rays. This is stated to be the case in arc lamps, in which the carbons are impregnated with metals, and also in the various metallic filament electric lamps. Special glass should be used with such lamps to cut off the ultra-violet rays. A highly technical article by Mr. H. Thirkel gives a valuable account of ultra-microscopy. Further articles deal with the determination of sex, British Carboniferous plants, &c. Many of the essays suffer from being far too specialised: they would appeal much more to the average reader with scientific interests if the subjects were treated in a broader and more elementary fashion.

SCOTTISH.

PROF. HARROWER, of Aberdeen University, in presenting the prizes to the pupils of the Gordon School, Huntly, made some well-timed remarks on the position and prospects of the teaching profession. While he regards it as one of the highest a man can enter, he is just afraid that at present it is absorbing more than its fair share of the brain power of the country. The ease with which secondary pupils and university students can enrol themselves among the ranks of intending teachers will eventually result in lowering seriously the emoluments of teachers, as the law of supply and demand will work as vigorously and ruthlessly with them as with others. Apart from this consideration, the existing facilities for entering the teaching profession seem to be discouraging the old enterprising spirit which sends university men into every corner of the world to pursue and excel in all sorts of professions and occupations.

THERE can be no doubt that Prof. Harrower has directed attention to a serious defect in our present system of secondary education. Secondary schools are, in many instances, becoming huge factories for the making of teachers and nothing else. Instead of being secondary schools in any real sense, they are miniature training colleges. It would be instructive, and probably startling, to have a return of all the pupils in secondary schools over fifteen or sixteen years of age preparing for professions other than teaching. We venture to assert that such a return would show that the teaching profession is almost the only occupation receiving as a whole genuine secondary education. Commerce and industry, medicine, and to some extent law, are being recruited, not from the secondary schools, but from the intermediate schools.

THE report of the Committee of Council on Education in Scotland, 1908–9, which has just been issued, states that the outstanding event of the year has been the passing of the Education Act, which imposes new duties and confers considerable further powers upon school boards. As, however, the new Act does not affect the proceedings of the year under review, further discussion of its bearing on the educational system has been delayed until next year. In the summary of statistics relating to schools, it is stated that, while the estimated increase of population has been 1·1 per cent., the number of scholars on the registers increased by 0·17 per cent., with an increase of 0·12 per cent. in the average attendance. The progress of higher grade schools since their institution in 1900 is shown by a table, which gives the number of such schools in that year as 27, and the average attendance as 2,561, the corresponding figures for 1908 being 169 and 19,932. A table showing educational progress since 1872 represents in a striking manner the enormous advance that has been made. In that year the number of schools was 1,979, whereas to-day it is 3,143, while the average attendance was 281,688 as against 692,144. The cost of maintenance in public schools is given as £3 11*s.* 1¼*d.*, while in voluntary schools it is only £2 15*s.* 1¾*d.* (a difference which is largely accounted for by the lower rate of salary paid in the latter schools). The total amount received from the education rate was £1,351,845, while the Parliamentary grant came to £901,492. A table showing the relative contributions from the year 1872 would be instructive, and would probably show that whereas both rates and State grants have enormously increased, the latter has entirely failed to keep pace with the former.

THE supply of school places all over the country seems to be fairly complete, and no further demands are likely to be made unless to meet exceptional increases in the population of different districts. With the present estimated population there might be 965,606 on the registers, and 804,671 in average daily attendance. The returns, however, only show 812,346 on the registers of all the schools, and 712,076 in average attendance. In other words, for every 100 children who might be on the registers, and for whom accommodation is actually provided, there are only 84 on the registers and 74 in daily attendance. Without unduly straining the compulsory clauses, it is felt that a considerable addition might be made in both cases.

THE Edinburgh University vacation course had an auspicious start this session. Lord Provost Gibson, on behalf of the general body of citizens, offered a hearty welcome to the students who had gathered from far distant countries to study within their ancient University. He said that he noted with regret that German no longer finds a place on the time-table of studies, but he trusted this is only a passing phase, and that by another year German will be assigned its proper place in the curriculum of secondary schools and in these courses. Sir William Turner, as principal of the University, also addressed a few words of welcome to the students, and said that the University authorities have done everything possible to make their stay profitable and interesting. He was pleased to find that the programme of work is to be varied with recreation and social enjoyment. Mr. S. M. Murray, member of the Edinburgh School Board, in the course of a short address, also referred to the disappearance of German from the curriculum. The decline of German in schools is owing to the insistence upon "the uniform curriculum" for all secondary schools during the first three years. Most people are agreed that a uniform curriculum is a mistake, for what is good for one school or one set of pupils is not necessarily good for all. He hoped that "the uniform curriculum," having served its purpose in introducing more *Realien* into schools, will soon be withdrawn.

THE annual report of Dr. Chalmers, medical officer for Glasgow, has special interest for teachers, in view of the exhaustive discussion of measles epidemics and their relation to school life. The report concludes by declaring against the prevailing methods of stamping out such epidemics, viz., closing schools or excluding pupils in whose family any case of measles exists. It would be extremely satisfactory, in the interests of education, if these conclusions were found eventually to be correct. The evidence adduced in favour of them can hardly be regarded meantime as satisfactory, and school boards relaxing their regulations excluding all members of affected families would rightly be regarded as jeopardising the lives or health of the children entrusted to their care.

UNDER the auspices of An Courunn Gaidhealach, a summer school for Gaelic has been opened at Roy Bridge, Lochaber. More than fifty students have come forward, and an attractive programme of studies and recreations has been prepared for them. Dr. Struthers, of the Scotch Education Department, is in full sympathy with the movement, and has enrolled as one of the students. Dr. Kuno Meyer, who has done so much for the encouragement of Irish Gaelic, has expressed strong approval of the curriculum laid down, and considers that it will be specially helpful to teachers engaged in Gaelic-speaking districts.

IRISH.

THE report of the Intermediate Education Board for Ireland for the year 1908 contains only one new feature, and that is the conclusion of the correspondence of the Board with the Lord Lieutenant, which has led to the appointment this year of inspectors. This correspondence contains the Board's views as to its duties with regard to intermediate education in the near future. The commissioners propose to distribute part of their grant to the schools on the basis of inspection; this can be done without legislation, and any attempt to administer it all on the basis of inspection they realise would be opposed strongly at present and could not be carried. That is to say, the abolition of the general examination could not now, under existing conditions, be passed through Parliament; at the same time, if inspection prove effective, the part of the school grant made dependent upon it can be increased gradually.

ONE of the chief objections to inspection has been its expense, which the Board estimates at roughly £5,000. During last year a change in the investment of the Board's funds has increased its annual income by £3,398 17*s.* 6*d.* The Board also estimates to save at least £2,858 by the new rule which prohibits students presenting themselves a second time in the same grade. If inspection is successful, the Board proposes to ask for legislation abolishing the general examination and substituting as the basis of payment to schools a dual and complicated system, consisting partly of inspection and partly of an honour examination for picked students, on which exhibitions and prizes will be awarded. This would save more money from the cost of the examinations. As, however, this proposal is for some more or less remote future, it may never come into operation; and, in any case, further details would be necessary before comment could be offered upon it.

THE report contains the usual summary of figures. The numbers of students examined and passing have been given in these columns already. The numbers of rewards for 1908 were—Exhibitions: boys, 311; girls, 99; total, 410. Prizes: boys, 343; girls, 111; total, 454. Composition prizes: boys, 133; girls, 86; total, 219. Medals, 81. The total amount of the school grant was £49,922 5*s.* 4*d.* The preparatory grade prize fund was £1,912, and a sum of £2,972 19*s.* 5*d.* was allocated in bonuses to schools for choirs and orchestras. The school grant was divided among 329 schools, viz., 165 boys', 124 girls', and 40 mixed schools. The boys' school receiving the highest single grant was the Christian Schools, N. Richmond Street, Dublin, £1,752 6*s.* 11*d.*, and the girls' school, Victoria High School, Londonderry, £778 7*s.* 9*d.* The total income of the Board was £85,656 16*s.* 4*d.*, of which £5,466 13*s.* 6*d.* was spent in administration, £16,438 10*s.* 4*d.* in examinations, £9,074 in rewards, and nearly all the rest in school grants.

THE Department has issued its explanatory circular and regulations in connection with its programme of experimental science and drawing, &c., for day secondary schools for the coming session 1909–10. There are no new regulations, but the Department directs attention to a practice which it deprecates, viz., in some schools to allow students under twelve years of age to attend instruction in the first year's syllabuses of the preliminary course, and then in the following year to enter such students in the classes for the second year's syllabuses and to claim grants at the second year's rates. The Department is of opinion that students under twelve are not capable of taking full advantage of instruction in first year's syllabuses, and all such students who attend classes before completing their twelfth year must repeat these syllabuses before proceeding to the second year's course. At the same time, the Department again directs attention to its rule that pupils of the proper age who are capable of profiting by promotion to a higher course should not be permitted to repeat the previous year's course. It further expresses a hope that the summer courses for teachers will shortly have satisfied the need of qualifying teachers, and will develop into "post-graduate" courses on special subjects for those already qualified.

THE seventy-seventh annual meeting of the British Medical Association in Belfast was noteworthy for the president's criticism of the requirements of medical education. The president, Sir Wm. Whitla, stated that the medical curriculum planned forty years ago is now out-of-date, and new branches of medical study have come into existence which require that the curriculum shall be entirely modified. In the words of Prof. Starling, "from the very commencement of his medical curriculum the work of the student should be directed; every scientific subject which he studies, whether it be chemistry, physics, or physiology, should be considered only in its bearings on his future work as a medical man." The Queen's University in Belfast, therefore, proposes an entirely new curriculum, which will follow generally the lines of the reconstruction recently introduced into the University of London. Within one year the student will be able to present himself for examination in all the preliminary subjects, experimental physics, chemistry, and botany with zoology; and in the next year he can complete his curriculum in anatomy and physiology, and then can give the last three whole years to practical clinical work and attendance upon the lectures devoted to the final subjects the practice of which is to constitute his life-work. This judicious arrangement will change the usual three years of preliminary education and two years of clinical study into two years of preliminary training and three years of clinical work.

WELSH.

THE Swansea school case has been tried before the Crown Court and judgment delivered. It will be remembered that the Swansea Education Committee discriminated between the salaries paid to teachers in the Church of England National School and their own provided schools, paying to the former lower salaries than to the latter, and denying any liability under the Act of 1902 to pay the same salaries to teachers in non-provided schools as in provided schools. The Board of Education, to which the matter was referred, sent down a commissioner, who reported adversely to the local authority on the treatment of the non-provided schools. Nevertheless, the Board of Education decided not to interfere with the decision of the local authority. The Lord Chief Justice held that this course was *ultra vires*, and that the local education authority had no power to differentiate in the matter of teachers equally qualified and teaching the same subjects between the salaries paid in the provided and non-provided schools.

THE summer school in connection with the Welsh Language Society has been held at Swansea Grammar School. There were 130 students, the largest number on record. Prof. E. Anwyl lectured on old Welsh literature: Prof. J. Morris Jones, on modern Welsh and prosody;

Prof. J. E. Lloyd, on Welsh history; Mr. S. J. Evans, on methods of teaching; Mr. Ivor Williams, on mediæval literature; and Mr. W. J. Gryffydd, on literature and modern Welsh. Mr. S. J. Evans once more put the case for Welsh studies, in that they fulfil the three great requirements of (i) practical utility; (ii) adaptation to school training; (iii) literary study, for illustration of recent developments in the study of Welsh. Mr. Evans mentioned the circumstance that twelve years ago, whilst on a cycling tour in North Wales, he, as an experiment, addressed people *en route* alternately in Welsh and English, and was always received with more courtesy and consideration when speaking English. But he had recently made another tour, and found things entirely altered. Now he got more politeness when he spoke Welsh.

OTHER summer schools have been held in Wales. Under the Glamorganshire County Council a course in educational handwork has been given, at the County School, Barry, at the opening of which Principal Griffith pleaded that the elementary schools were not doing all that could be done to make capable citizens, and urged that the remedy was that of practical work which needed co-ordination of hand and eye, as well as book-work. In Central Wales there has been a comprehensive holiday course for teachers at Aberystwyth, and the Fabian Summer School has been held in Merioneth. In North Wales the first Summer School of Temperance and Hygiene has been held at Rhyl, under the auspices of the North Wales Temperance Federation.

AT a meeting of the Flintshire Education Committee one member suggested that headmasters of county schools "were drawing large salaries and had very little to do." It was proposed that the salary of a headmaster be limited as a maximum to £350 a year. The present schemes lay down a minimum salary of £120 and minimum capitation fee of £1 10*s*. The voting showed 17 for the motion and 15 against. Of course, the matter will have to be referred to the Board of Education, and, as the chairman suggested, it is unlikely that the reduction will be sanctioned and the schemes changed. Still, the carrying of such a motion shows the attitude of a majority of the Education Committee. At Carnarvon the county school governors discussed lately the reduction of the school fees from £6 to £4. There can be no doubt that the reduction of school fees tends to reduce the salaries of the teachers, and the chairman remarked that, instead of reducing the fees, they should aim at improving the position of the teaching staff, and added, "it is a shame to think we are employing university graduates at wages less than are paid a journeyman tailor's cutter." In spite of the chairman's appeal, the matter was referred to a committee. It is evident that those entrusted with educational administration in Wales are, in some cases, drifting into the idea of cheap teachers for secondary schools as well as primary schools.

THE Carnarvonshire Education Committee has decided to include cookery for boys in the curriculum of the Llandudno elementary schools. "It is not intended," we are told, "as a reflection on the cooking abilities of Welsh girls. It is merely intended to show Welsh boys the very fine career which professional cooking offers in districts like Llandudno, abounding in hotels and boarding establishments." We are further informed that in Llandudno hotels the wages paid range from 15*s*. to £8 a week. We are not told whether these posts are exclusively held by men, and at what age a man-cook begins his work. It may be assumed that the large numbers of the elementary-school boys would not find employment as cooks at fourteen years of age. What is to happen to the embryo cooks between fourteen years and the age they can obtain a cook's post at the hotel? Who is to guarantee that the knowledge in school cookery, as an additional subject, will be regarded by the experienced cook as really valuable? Moreover, if it is to be as comprehensive and thorough as the tender age of the elementary school permits, what becomes of the idea of a liberal education?

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

The Intermediate English Reader. By N. G. Herdin and C. S. Fearenside. viii+232 pp. (Stockholm: Norstedt.) 3 kr. *Kommentar till The Intermediate English Reader*, av N. E. C. Herdin och C. S. Fearenside; jämte *Specialordbok*, av J. P. Boberg och C. S. Fearenside. viii+172 pp. (Same publisher.) 2 kr. 50 öre.—This reader is intended for Swedish students, as appears from the commentary and vocabulary; the reader is entirely in English. It is compiled with much skill, and offers great variety and much information about English life and ways, suitably illustrated by drawings, photographs, and maps. A feature is that more than twenty pages are devoted to facsimiles of English handwriting. The authors rightly claim that the get-up is entirely English; the print is clear and careful. The only blot on the book is the title-page of the reader, which no self-respecting English printer would have set up, and which suggests the advertisement of a drug-store.

The Fairy Tales of Master Perrault. 102 pp. *Souvestre, Le Serf.* 110 pp. (Cambridge University Press.) 9*d*. each.—These are reissues of texts published some years ago, with notes and vocabularies by Prof. Rippmann and Mr. Ropes respectively. They are cheap editions, in which the notes have been omitted. If instead of retaining the vocabularies the publishers had issued the texts with reform exercises, they would have done a better service to teachers.

The Ideal System for Acquiring a Practical Knowledge of French. Rapid, Correct and Original. Arranged to meet the Requirements of all Students. By Mlle V. Gaudel. xi+315 pp. (Relfe.) 3*s*. net.—We have given the title in full; but if this should not suffice to show the extraordinary value of this book, we might quote further commendation from the preface and from a conversation on p. 138, in which the book and its method are still further "puffed." We are willing to grant that the conversations are good, and that the grammatical information is well presented; but we consider that the book is unsuitable for class work. It is, indeed, the old translation method that is employed exclusively. Disconnected sentences of the bad old type appear in profusion; and among them are some which afford comic relief, as is usual in books of this kind. For the delectation of our readers we cull a few blossoms: "The pens of the son are bad. This child is brutal. They have a great quality. Where is their cork? Your chemises are too wide. Take the biggest sardine. I had eaten brains. None of your friends is worthy to be loved; all are wicked. We had forgotten to give you the razor and the curling-tongs. It is necessary to warn your husband that you are here.

Where are the leeches you bought? They have not spoken of the snails. Does she dye her eyebrows? Who is behind the door? The surgeon with the nurse. He wishes to have a willow on his grave." What a pity Mlle Gaudel has no idea of the reform method and no sense of humour!

W. H. Riehl, Die Nothelfer. Adapted by P. B. Ingham. viii+72 pp. (Methuen.) 1*s.*—Riehl's well-known story, "Die vierzehn Nothelfer," here appears in a somewhat abridged form, with a brief account of the author's life and works and a complete vocabulary. It makes an acceptable reader. The text has been carefully printed; we have noticed only the following misprints: *gleichsalls* (p. 12), *Deflillier-* (p. 14), *fo* (p. 18), *sämmtliche* (p. 29). *Gewicher* (p. 11) is better rendered "horselaugh" than "neighing," and "to fasten with a string" does not properly explain *nesteln* (p. 13). To give *ist geritten* as the perfect of *reiten* (p. 60) ignores the fact that when the goal is not mentioned *hat geritten* is also used.

Self-education in Pronunciation. By John P. McLaurin. 98 pp. (Glasgow: Holmes.) 9*d.* net.—This "simple, pleasing and easy method" has been "prepared for Glasgow and surrounding district, but the method is applicable to any district throughout the English-speaking world," and its author is "Trainer in Public-Speaking." It is an amusing piece of work, unfortunately not based on a scientific study of the subject. Mr. McLaurin is evidently one of those teachers of elocution who are gifted with considerable powers of observation, but who hoe their own patch without ever looking over the garden wall to see what flowers and vegetables others are growing. He has collected a number of cases where rhyme gives an indication of the pronunciation, and such evidence, checked by the standard dictionaries, he regards as a trustworthy guide. The little book may do good service in attracting attention to the pronunciation; but Mr. McLaurin's conclusions should be accepted with caution. His style is, as a rule, unpretentious, which is rather exceptional for a teacher of elocution writing about his "art"; only occasionally does he lapse into such language as "he who says soot for suit strikes a derogatory note of educational upbringing," or "dropping the R has generally a retinue of congenital weaknesses accompanying it."

English.

Selections from Early American Writers, 1607–1800. Edited by W. B. Cairns. xii+493 pp. (New York: The Macmillan Co.) 5*s.* net.—As the preface points out, this book is intended primarily for class use by students who are making a fairly detailed study of American literature; their number in this country will naturally not be considerable, and so it might be thought that we would have practically no use for the book on this side; but that is not our opinion. In the first place, the selection is exceedingly well made from a purely literary point of view, and for English students especially it is as necessary to follow the development of the language in America as to be familiar with its output in Scotland. Then the book should fill a real want in the teaching of history; for it is only by entering into the point of view of such men as John Smith, William Bradford, and John Winthrop that we can ever arrive at a just estimate of the early settlement of America; and it is only by studying the writings of Benjamin Franklin, Thomas Paine, and Thomas Jefferson that we shall ever really understand the meaning of the Declaration of Independence—to mention only two matters which, for Englishmen, are supreme factors in modern history. We repeat that the book is of real value, and we hope that English teachers will give it the welcome which sound but unassuming scholarship deserves.

Mason's Senior English Grammar. Edited by A. J. Ashton. viii+375 pp. (Bell.) 3*s.* 6*d.*—Reviews of the Junior and Intermediate Grammars by the same author, as revised by Mr. Ashton, have already appeared in THE SCHOOL WORLD. If there were in them certain features which restrained us from a whole-hearted approval, we have the more pleasure in saying that the present volume seems to us admirably suited for its purpose—use in training colleges and the highest forms of secondary schools. The study of English on the philological side has made vast progress in the last fifty years, and Mr. Ashton may fairly claim to have given here in a scholarly and agreeable form the conclusions at which modern scholars have arrived. In choosing school text-books, it is the English grammar which always presents the greatest difficulties; but for the highest forms, that is, for boys preparing for university matriculation, we can recommend Mr. Ashton's book without reserve. There is that combination of history, phonology, etymology, and syntax, all illustrated by stages of growth and development, which alone makes current usage intelligible. There is also a running fire of stimulating questions, which in themselves serve to answer a host of difficulties. For students who intend to specialise in English at the university—may their number increase—this Senior Grammar is a splendid foundation.

The Teaching of English Composition. By Miss E. E. Covernton. 97 pp. (Dent's Modern Language Series.) 1*s.* 6*d.* net.—So much dull prose has been written on the teaching of English composition that the subject itself has in some quarters assumed a dulness not its own. We are therefore doubly grateful to Miss Covernton for writing a book at once inspiring and sensible. That her theories have been worked out under practical conditions is shown by some delightful extracts from the work of her pupils; the "Conversation in a Rookery" abides with us as a charming example of a child's observation and humour. Teachers will find the whole book singularly suggestive; but most of them will turn with especial interest to the last chapter, on the "Study of Prose: Style." The treatment of Lamb's essay on Mackery End is a splendid model for those teachers who seem to lose their grip when the class is no longer reading poetry; for there is brought out full appreciation, not only of the human interest, but of the delicate art which most of us are content to feel æsthetically, but have usually despaired of sharing intellectually, with our pupils; and, more than that, Miss Covernton knows how to study the dainty mechanism of style by comparison and illustration without resorting to cruder analytical methods. We sincerely hope that every teacher of English will read Miss Covernton's book.

A First Précis Book. By E. A. F. M. Chatwin. xi+246 pp. (Edward Arnold.) 2*s.* 6*d.*—Mr. Chatwin has been bold enough to base his selection of passages for précis upon the English classics, regardless of those high spirits who are shocked at such base uses of the works of genius. It is an old battle, not to be renewed here. Let it suffice that Mr. Chatwin, in the course of a businesslike preface, wisely ignores the issue, and provides a hundred excellent passages which cannot fail to stimulate the power of thinking. A selection which includes the "Master of Ballantrae" and "Margaret Ogilvy" cannot be said to be dull or commonplace—the besetting sin of the usual

précis book. Mr. Chatwin has our hearty goodwill, and we hope that his venture will encourage teachers to make sure of their pupils' intellectual interest in what they read. There is just a little danger at the present moment that English reading in schools may become a trifle flabby.

History.

Stories of the English Told to a Child. By "F." xii+439 pp. (Blackwood.) 5*s.* net.—The title of this book sufficiently explains its object. The stories, which are well told, range from "the coming of the white horse"—*i.e.*, of the Jutes—into Kent down to the battle of Waterloo. The main history is thus covered in simple fashion; and when we enter the eighteenth century, instead of ordinary history, we have the stories of Anson, Wolfe, Cook, Clive, &c. There are several illustrations, some of which are photographic.

The Reign of Queen Victoria. By J. H. Rose. 288 pp. (Blackie.) 1*s.* 9*d.*—This is a well-written account of Victoria's reign, telling in a pleasant way all that our scholars will want to know of the life of their fathers and of things in which these were interested. There are many good illustrations, a summary of the "reading lessons" which have preceded (to which are added paragraphs in small type containing further particulars), some pages of "notes and meanings," a list of Victoria's family, and two pages of "dates of chief events."

History Teaching by Biographies. Vol. i. Julius Caesar to Sir Francis Drake. By A. Eve. vi+155 pp. (Charles and Dible.) 2*s.* 6*d.* net.—Miss Eve thinks that history is best taught to children under the age of fourteen or fifteen by making use of biography. She has therefore here given the outline of thirty life-stories thrown into the form of instructions to the teacher as to the use to be made of the material provided. The "aim" of each lesson is first given, and the apparatus, maps, pictures, &c., required. Then follow directions as to the course of the lesson, and as to a blackboard summary. The book should be useful for teachers in training and in their first years of practice.

Selections from "Short Studies on Great Subjects." By J. Thornton. xi+161 pp. (Longmans.) 1*s.*—Six selections from the late Prof. Froude's well-known volumes, to which are added seven illustrations, twenty-one pages of explanatory notes, and a short introductory sketch of Prof. Froude's life. It belongs to a series of class-books of English literature, and though the editor defends his author against the common charge of inaccuracy, it is as literature rather than history that we commend the book to our readers. It is excellently printed, and should find a place in the school library.

School History of the County Palatine of Durham. By F. S. Eden. 256 pp. (Clarendon Press.) 1*s.* 6*d.* net.—Mr. Eden is evidently a master of his subject, and he gives us in this booklet a first-class account of the Palatine Bishopric, preceded by a story of the county from prehistoric times, and followed by chapters on the city of Durham and the towns of the county, on the coalmines, the Nevills, the roads and railways, place-names, and present-day Durham. The whole is a most readable county history, and should be welcome, not only to our scholars, but to their parents and all interested in the county, or, for that matter, in English history in general.

A London Reader for Young Citizens. By F. W. G. Foat. x+192 pp. (Methuen.) 1*s.*—This is an excellent little book. There are four illustrations in colour, eight maps, and seventeen other illustrations. The book is divided into three parts. In the first, "London of To-day" is described, with its forms of government, its means of communication, and much besides. In the second, "London in the Olden Time" gives occasion for the history of many institutions, such as the New River and the Bank, which have arisen in comparatively modern times; and in the third, "London of Long Ago," some interesting lessons are given on the city in the Early and Middle Ages. Specially useful in this part are the five maps of London at different periods, printed in the usual way, but in each case covering a lightly printed map of the present day, thus affording the means of contrasting the size of the old city with the area of present-day London.

Mathematics.

Plane and Spherical Trigonometry and Four-place Tables of Logarithms. By W. A. Granville. ix+264+(Tables) 38 pp. (Ginn.) 5*s.* 6*d.*—An introduction to plane and spherical trigonometry specially adapted to the requirements of technical students. The leading properties of the trigonometric functions are discussed in the first hundred pages, the remainder of the book being occupied with the solution of triangles, both plane and spherical. The theory of logarithms is explained fully and carefully, and their use in ordinary calculations, as well as in those more immediately connected with the solution of triangles, is made clear by means of the numerous worked examples. We are glad to find in the collection of tables at the end of the book one giving the values of the trigonometrical functions for decimal divisions of the degree. In addition a combined ruler and protractor is provided, so that the student is fully equipped for attacking all ordinary problems. It is altogether a very useful book.

Practical Arithmetic for Schools. By W. G. Borchardt. viii+445+(Answers) lxxvi pp. (Rivingtons.) 4*s.* 6*d.*—One result of recent discussions regarding the teaching of elementary mathematics has been the breaking down of the walls which rigidly separated one subject from another. This is well exemplified in the book before us, for we find, in addition to pure numerical work, practical exercises on mensuration and the determination of specific gravity, sections on logarithms, scales, the slide-rule and vernier, while algebraic notation is introduced early and algebraic methods and graphs are freely used in the solutions of the questions. The prime requisite in numerical work is accuracy, and we are glad to see that the author throughout the work insists upon the use of rough checks. The sections on approximations, contracted work, and degree of accuracy give all that requires to be known about these matters without the unnecessary elaboration which some teachers are prone to indulge in, which leads their pupils to regard contracted methods as much more troublesome to use than the ordinary uncontracted ones. We can heartily commend this book to the notice of teachers of arithmetic.

Elementary Mechanics. By C. M. Jessop and T. H. Havelock. viii+277 pp. (Bell.) 4*s.* 6*d.*—This text-book includes the elements of statics and dynamics. After four chapters dealing with rectilinear motion and the composition and resolution of vectors, there are six chapters on statics, followed by others on curvilinear motion, impact, graphical statics, and the energy of rotating bodies.

Newton's laws of motion are taken as the starting-point of dynamics, and the treatment does not present any novel features. The problems considered are of the idealised type of the orthodox mechanics; we think no harm would be done by bringing students a little more into touch with reality. In the first three chapters we have noticed a looseness in the use of the terms *particle, body, mass, weight*, which may cause some confusion in the minds of beginners. There is a mistake in the heading of paragraph 186. Apart from these defects, the book will be found quite satisfactory for students of a standard such as that of the London Intermediate.

A Course in Mathematics. By F. S. Woods and F. H. Bailey. xi+410 pp. (Ginn.) 10*s.* 6*d.*—This volume presents the second part of a course for students of engineering and applied science, and deals chiefly with integration and the solution of differential equations. The method of treatment closely follows the lines generally pursued in text-books on these subjects, including the usual applications to geometry, plane and solid, the determination of centres of gravity, and moments of inertia. Illustrations from mathematical physics are but sparingly introduced; one would have expected a larger number in a work of this character. For example, in connection with the equation $\frac{\partial^2 z}{\partial t^2} = a^2 \frac{\partial^2 z}{\partial x^2}$ no mention is made of any of the very interesting physical problems of which it is the mathematical expression. The chapter on reduction formulæ might be improved by pointing out that the special rules for the integration of powers of tangents, secants, &c., are particular cases of the more general ones for $\sin^m x \cos^n x$. There is a very useful chapter on line integration which should be of value to students of electricity. The aim of the authors throughout has been to give a concise working knowledge of the operations involved in the solution of the problems they are likely to encounter, and though in some cases the treatment is rather scrappy, the book, on the whole, seems well adapted to the object in view.

Science and Technology.

The Stone Ages in North Britain and Ireland. By the Rev. Frederick Smith. xxiv+377 pp. (Blackie.)—The author of this handsome book has been for many years an enthusiastic collector of stone implements in the river-gravels and glacial drifts of Scotland. His finds have long convinced him that, contrary to the general opinion, palæolithic man inhabited Scotland during the Ice Age. In evidence thereof he gives his readers more than five hundred figures of his specimens. To the eye of one who is no expert in these matters, many of the implements appear rougher in character than the normal palæolith, and nearer to the eolith; but allowance must be made for the fact that, instead of being made of the familiar flint of the south of England, they are of other and varied materials—basalt, quartzite, &c. As to their artificial nature, while any one specimen taken alone might not carry conviction, the cumulative effect of the large series of drawings is such that one feels that it is for those who deny that they are human handiwork to bring forward evidence that accidental natural agencies can produce similar results. Dr. A. H. Keane supplies an introduction, in which he refers to the remarkable recent discoveries of primitive stone implements in many parts of the world; and, in answering the objection sometimes urged that these stones are too abundant to be other than natural, points out that man is a wasteful animal, and happily compares the readiness with which savages make a tool and throw it away when used with our own reckless use of lucifer matches. The book is written in a vigorous style, and will be read with great interest by all who are already collectors of stone implements. Whether it will interest the general public is doubtful—cumulative evidence is wearisome to any but a specialist. If some of the more generally interesting passages were woven together into a book of one-quarter the bulk, it might obtain a wider circulation than can be hoped for the present volume. The abundant illustrations are well reproduced. There is no index.

Animals at Home. By W. Percival Westell. 240 pp. (Dent.) 3*s.* 6*d.*—These twenty-four essays "appeared serially in that eminently useful and interesting little monthly magazine for young folks, *The Band of Mercy.*" They are now republished with a large number of illustrations from photographs, and will doubtless be no less popular in book form. The autobiographical prattle of Mr. Westell's animals is in no case beyond the general comprehension of a child, though some of the words they use may be so. Being at home, they split their infinitives and are otherwise not pedantic in the matter of grammar. Their portraits, however, are distinctly good, and a coloured frontispiece by Miss Lucy Kemp-Welch is delightful. Miss Marie Corelli contributes an amiable introduction.

Our Teeth: How Built Up, How Destroyed, How Preserved. By R. Denison Pedley and Frank Harrison. 99 pp. (Blackie.) 5*s.* net.—The fact that more than 80 per cent. of the children in the United Kingdom are suffering in one form or another from diseased or defective teeth shows how urgent has been the necessity for a clear and authoritative statement of the causes of dental diseases, the means of preventing them, their effects, and the need for their rational treatment. This handsome volume, by authors of high professional standing, supplies the want admirably. Thoroughly scientific and up-to-date, and supplied with original and valuable illustrations, it should appeal alike to students of physiology and to those men and women who are concerned to know how a question seriously affecting personal and public health may be dealt with practically.

Essentials of Botany. By J. Y. Bergen. ix+380 pp. (Ginn.) 5*s.*—Of this book a large part, dealing with flowering plants, has already appeared in the same author's "Elements of Botany," which is well known in America. The remaining chapters are devoted to cryptogamic types, which are treated with more fulness than is usual in text-books of similar size. In both sections an abundance of useful practical exercises is given, while the descriptive passages are clear and interesting, and illustrated with excellent drawings and photographs. The result is a well-balanced course of work from which an intelligent student might derive, in one year, sound views of the plant kingdom as a whole. The only drawback to the use of the book by British students is the unfamiliarity of many of the plants referred to.

A First Book of Botany. By Elizabeth Healey. viii+142 pp. (Macmillan.) 1*s.* 6*d.*—In spite of the multitude of good books on botany already in the market, Miss Healey's little volume supplies a want which has been felt by many teachers. It is elementary and simple without being puerile; it covers a fairly wide and well-selected field without becoming in the least degree vague or garrulous; its method of presentation throughout is such as to arrest the attention of the reader. The book is well illustrated and attractively printed and bound. For younger forms beginning the subject we know no more suitable guide.

Notes of Lessons on Hygiene and Temperance. Vol. ii. By E. A. Chadwick. 184 pp. (Pitman.) 3s.—Mrs. Chadwick's book is a sound piece of work which may be recommended to teachers unreservedly. It contains but few technicalities, and avoids the "jargon of physiology," yet is entirely scientific in method and substance. We welcome particularly a section on "mothercraft"; it should do something to remedy the average girl's appalling ignorance of the subject. Prof. Sims Woodhead contributes an introduction.

Pedagogy.

Inspección Nacional de Instrucción Primaria Memoria. Correspondiente al Año 1907. Presentada á la Dirección General de Instrucción Primaria y al Ministerio de Industrias. Trabajo e Instrucción Pública. Por el Dr. Abel Pérez, Inspector Nacional. 2 vols. (Montevideo.)—This is a careful piece of work, which will be read with interest by those who have a fluent knowledge of Spanish. Every page shows it to be the outcome of experience on the part of a capable writer. The two volumes give a lucid account of public instruction in South America during the period which they cover. The writer refers to the choice of teachers of modern languages, and says an Englishman, Frenchman, or German must be better qualified to teach his mother-tongue than a South American—if these foreign teachers have a fair knowledge of Spanish and are experienced in teaching; but headmasters, in order to keep pace with the requirements of the times, have to take any foreigner available; thus it happened that South American schools became harbours of refuge for all sorts of foreigners out of work. But the case is altered now, or is improving.

Such teachers looked upon teaching as a makeshift, and cared little about their work, their mind being continually occupied with plans and resolutions how to make their escape from the thraldom of boarding-school life.

If the task of managing a class of South American boys is difficult to Spanish teachers, what chance has a foreigner, who lacks the principal means for the accomplishment of his task? His imperfect knowledge of Spanish gives rise to a series of misunderstandings and ridiculous scenes. As he does not possess the power of clear expression, he is helpless and at the mercy of his pupils. Imagine what knowledge in these circumstances he will be able to impart, and what the training will be which the pupils receive at his hands! Why does the headmaster not support him? Thereby hangs another tale. The headmaster or inspector, generally a great Greek and Latin scholar, has, in most cases, an indifferent knowledge of modern languages. Consequently, in choosing his foreign assistant, he depends entirely on the foreigner's dress and personal appearance, or engages him on the recommendation of his agent and other referees.

Reports on Elementary Schools, 1852–1882. By Matthew Arnold. New edition. (Wyman.) 1s.—The reprinting for official use of these interesting reports is most opportune. In his introduction, Mr. F. S. Marvin directs attention to the statesmanlike views of Matthew Arnold, and adds that the main problems are unchanged since his day. The body of the book is a clear statement in the form of nineteen general reports on such subjects as high fees, the teaching of grammar, value of recitation, insanitary condition of schools, the necessity for free play, the teaching of Latin in the primary school, and the dangers of over-pressure. The remainder of the book is devoted to special reports on Borough Road, Stockwell, Homerton, and Westminster Colleges. Very high tribute is paid to the late Sir Joshua Fitch, principal of the old Borough Road College. Most books of this type are ancient history, but this is new and vivid, and we are still engaged in quarrelling over its suggestions. When we consider the stress laid by Matthew Arnold on the encouragement of the primary-school teacher towards degree work, when we note his suggestions as to the importance of the compulsory study of universal history and widely chosen recitation, it seems strange that this volume should be published officially. It is building the tombs of the prophets with a vengeance.

Miscellaneous.

Speaking in Public. By Charles Seymour. xii+208 pp. (Routledge.) 3s. net.—The author of this book is described upon the title-page as holding, among other offices, "professorships" in elocution and recitation at Owen's School, Islington, and at Camberwell Grammar School. His aims, as stated in the sub-title, are to show "How to produce ideas and how to acquire fluency"; and if it were possible to gain both these objects by studying a single book, originality and eloquence would not be so rare as they are at present. The author has a high reputation as a teacher of elocution, but we are of the opinion that his instructions tend to make what are termed "windbags" in vulgar language rather than orators whose words are worth a hearing. The main idea is to commence speaking, even though you have nothing to say. For instance, Exercise VII. advises the aspirant to open a book at any page and begin to speak immediately upon the first noun which happens to occur in the top line. The tongue is to waggle while the brain is trying to create a thought suggested by the noun. The method is reminiscent of the "sharp practice" evenings of Mutual Improvement Societies, when a certain number of subjects were written upon folded slips of paper, and a member called upon had to take a slip from a tray, open it, and speak upon the subject. No doubt confidence may be obtained by this method; but not ideas or true oratory. But Mr. Seymour apparently approves of the axiom, "A speech can be made upon any point and at any distance from that point." While we may be permitted to doubt whether melliferous utterance can be secured by following his advice, we believe many useful hints can be obtained from the book. It is distressing to find, however, a teacher of elocution using split infinitives so freely. There are no fewer than three on p. 69—"to emphatically express," "to further pursue," and "to again revert." Although we ought at all times humbly to acknowledge our faults of literary style, we ought most chiefly so to do when writing upon the art of expression.

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LOCAL HISTORY IN THE SCHOOL CURRICULUM.

By GEORGE C. PRINGLE, M.A.
Rector of the High School, Peebles.

MAN is conditioned by time and space. Hence the ultimate justification for the teaching of geography is that a man should know his position in space, and of history, that he should know his position in time. As a child may best realise the physical features of other districts and other lands by reference to those of his own locality, so a first-hand acquaintance with local history will give him the best introduction to the reality and significance of national and of general history. He will thus see history face to face, not only in its local, but also in its national aspects. A study of local history, far from restricting his interest in the subject, will be the first means of acquainting him with the original sources of the history of his native land.

No subject in the school curriculum, as generally taught from text-books, is so lacking in reality as "history." The sanguinary pictures of soldiers, cardinals, and kings in the "Readers" of the early stage do not atone for the dreary dullness of the impersonal and external method of the text-book of the upper forms. In many, if not most, of the training colleges "history is expected to flourish on second-hand compilations, and neither in the library nor during the course has a single original document ever been seen." Those who maintain that history should be taught as a branch of sociology are right in their assumption that history as a school subject should not be taught as a second-hand series of generalisations. They are right in insisting on the study of the subject in the concrete. They are wrong in insisting that you must begin with the local policeman, the motor-car, or the town council. In other words, their starting-point is wrong. Strictly speaking, they make it the present, or, at the best, the identification of the present in the past through a long series of removes: a difficult and therefore an uninteresting task for children. The more conventional method, the identification of the past in the present, is much easier, and therefore much more interesting, at least to young minds. John Richard Green says, "There is hardly a better corrective for" the narrow and partial view which one is so apt to take of mediæval history, "than to set a man frankly in the streets of a simple English town and bid him work out the history of the men who had lived and died there. The mill by the stream, the tolls by the market-place, the brasses of its burghers in the church, the lingering memory of its guilds, tell us more of the past of England than the spire of Sarum or the martyrdom of Canterbury. . . . In England the history of the town and the country are one."

The problem, therefore, is not one of local *versus* national history. The greater includes the less. They cannot be separated either in teaching or in thought. If vital results are to be produced, connexions must be sought and made. The aim, in short, is to get as near the past as possible, and the more we are helped directly by physical objects or by substitutes for these there will, negatively, be less strain put on the imagination and memory of our pupils, and positively greater stimulus given to each. The conventional method assumes that the remote is more interesting than the present, and the conventional method is right. The remote is more interesting than the present, not because it is remote but because of the pleasure it evokes when its association with the present and the personal is recognised. It is this association of the past with the present and with himself that arouses a boy's imagination. But the present alone does not suggest the past. It is not for nothing that the clairvoyant has need to touch or handle some physical object before the vision of the past is vouchsafed. "I like the 'Iliad' better," says Anatole France, "because of what I have seen of the rude earthenware of Hissalrik, and I appreciate the 'Divine Comedy' of Dante all the more because of what I have learned of Florentine life in the thirteenth century." And this identification of the present in the past in single, immediate, and accurate conceptions ought to be one of the primary aims in the teaching of history. It is from this æsthetic appreciation of history, produced by reference to the concrete, that can alone spring that enthusiasm for history which, according to Goethe, is the thing which matters most.

One reason why the study of national or of

general history is cast aside when school is left is that school pupils as a rule have had no introduction to first-hand sources and do not know where to find them. Is it not the case that amateur students of history first begin with the study of their own locality? Once arouse an interest in the history of the locality, and it will as a rule remain in after-life. For the knowledge acquired has been associated with the pupil's individual concrete experiences. Nor will this æsthetic appeal be confined to one's own locality. A desire to see other districts and other lands is more likely to be fostered by the topographical study of history than by the reading of school text-books. Nor will such a method exclude the use of books; but these will be used in the right way. Possibly an entirely new type of school history books will come into use: books that can be used as a means to an end—the end being information and the motive interest.

Intellectual appreciation of history is a later growth in the pupil's mind, and can no more come first in the study of history than it can in the study of literature. It has often been urged of late that history should be taught in school so as to give the pupils "wide views," and it has been assumed, rightly or wrongly, that such a method of teaching would exclude from the curriculum national history as it has hitherto been taught in schools. But if "wide views" means long connexions, I see no objection to the phrase. "Wide views," however, in themselves are of no value. Significance is of value. Significance can come only of connexion. It is far more important that the pupil should see things clearly, vividly, and connectedly than that he should have wide, misty expanses of historical facts mis-set and distorted before his mind's eye. If wide views mean generalisations on meagre data, then they may be worthless to the pupil and even positively harmful. The attempt to see everything at once can only end in cram or pedantry. Historical facts must have significance, and the pupil should be able to see them in the light of his experience. Knowledge of details must come before the generalisations from which they are drawn, except where knowledge may be intuitional. One must weave the web of history before one can study the pattern. But wide views may be had even from one's own locality, provided local events are linked up with national and world-wide categories or movements. If modern teaching is dull, it is because it is not sufficiently related to life and to the universe as a whole. When this is effected, the individual, the local, and the national will each acquire a vital and enduring interest. The world is still as wonderful and interesting as it was in the early days of Greek mythology. If economic wealth is useful only in proportion as it is assimilated through human activities, so historical knowledge is valuable only when it can be used up through the vital experiences of the emotions and the intellect. Hence the connexions of historical events must be those which most vividly and immediately appeal to us. It is the locality alone which can best do this for the pupil, and the locality is valuable because it is the nearest and readiest source of concrete illustration. It is a vital experience in the pupil's life when he can in thought or sentiment connect the locality with the nation and the nation with civilised humanity.

It follows, therefore, that the teaching of history in schools involves the study of national, general, and local events. Courses of study in local, national, and general history in a school curriculum can only be taken more or less concurrently. We cannot put them in strict sequence in history any more than in geography or nature knowledge. History, like geography, science, and literature, must be realised in life, and we must supply concrete historical material for the minds of the pupils to work upon. Hence one may conclude that the place of local history in the school curriculum is intellectually justified by reference to the principles of the known to the unknown and of the concrete to the abstract.

But another reason may be urged for its adoption. There is the moral value of the subject. Greater knowledge of one's neighbours and neighbourhood is bound to result in greater sympathy with them. The first step towards loving one's neighbour as one's self is to have common spiritual and intellectual interests. Such sympathies are bound to promote civic and national solidarity. If moral deterioration is greater, as some economists assert, in the country districts than in the cities, one of the causes is the lack of intellectual interest in the history of the locality. History may thus acquire a new meaning to the pupil and to the teacher. It is an inversion of fact to assume that a study of local history tends to a narrow provincialism. Provincialism is narrowest where it is most ignorant, and the cultivation of sympathy is a necessary training for the philosophic conception of history. Nor are the political bearings of this aspect of the question unworthy of consideration.

But if local history is to be included in the school curriculum, the material will have to be collected. Hence the need for (1) a regional survey; (2) a bibliography of the district; and (3) a classification of material in (*a*) a library, museum, or history room, such as that described in The School World for January, 1909; (*b*) note-books, indexes, &c.

The Ordnance Survey map of the district might be tinted to represent monuments or remains belonging to such periods as the Pre-Roman, the Roman, the Norman, the Tudor, the Stuart, &c. It would be possible in some particular districts to indicate all of these in places almost in sight of one another. In the compilation of a district or county bibliography, such a book as Longmans' "Bibliography of British Municipal History" (12*s.*), by Prof. Gross, of Harvard, although published more than ten years ago, will be found useful. It ought to be a comparatively easy matter, with the assistance of the local librarians, to bring the local list up to date.

As an illustration of the wealth of local material that lies to hand in most districts, and of the great

activity in historical research in recent years, I find, on comparing Prof. Gross's list of Peebles Burgh and County books with a hastily compiled bibliography of my own, that the numbers are six and forty-seven respectively, the latter number being exclusive of purely literary works.

In the history room the plans of camps and pictures of buildings and town should be arranged chronologically. From the plans the pupils will observe readily the growth of historical scholarship as indicated by the greater accuracy and detail in such plans, and from the pictures the great changes that have been effected in the appearance of the landscape within 100 years or less. The charts, which should be long rather than deep, should have a blank space left for the filling-in of local detail beneath the national categories. Coats of arms of historic families, burghs, counties, and corporations might also be displayed in their appropriate chronological panels.

The following is suggested as an outline course :

	Age	Subject-matter	General method
I.	6–10	*General Knowledge Course.* Geography, history, and nature knowledge of the district and world.	Deal with striking features and connect local with general.
II.	10–15	*Separate Course in Local History.* Outstanding local monuments and principal historical associations which can be connected with the great events in national and general history. Once a fortnight or a summer course of once a week for three months.	Deal with these in chronological sequence and always in connection with natural and general history ; *e.g.*, Roman camp with Roman occupation, &c. Local events should be connected with the salient features of national and general movements.
III.	15–17	*Separate Course in Local History dealing with the Social Life of the Community* as illustrated by the story of its great families, its lands, mills, churches, schools, roads, boundaries, agriculture, and other industries, fête days, &c. Once a fortnight or a three months course in summer.	Connect again with national history. Introduce to sources of national history. Refer to original documents and local (printed) charters. Give elementary exercises in historical research.

Given three periods a week for history, the time-table of the post-intermediate course could be worked out as follows :

Local history, one lesson per fortnight.

National (Scottish or Irish) history, one lesson per fortnight.

British history, two lessons per fortnight.

Classical or general history, two lessons per fortnight.

Total—six lessons per fortnight.

Assuming that the inclusion of local history in the school curriculum has been justified on educational grounds, there remain to be disposed of the objections as to (1) time, (2) text-books, (3) examinations. The answer to (1) is that greater interest and firmer grasp of the subject will more than compensate for time sacrificed from the ordinary lesson. This has been the experience in the application of direct methods of teaching to literature, languages, mathematics, and science. As regards (2) it is not a vital objection; it ought rather to be regarded as an advantage. The teacher of history should get to know his locality historically, just as the teacher of geography or natural science gets to know it, not from text-books but from observation. It follows also that teachers will have to receive some training in methods of historical research. A professor in a French normal school a few years ago wrote :

Un de mes collègues, à sa sortie de Saint-Cloud, a passé deux ans à établir et à mettre au point pour ses élèves une histoire aussi fertile que possible en preuves et remplie d'observations régionales concrètes. Dégagé de l'enseignement verbal dont l'école l'avait nourri il allait pouvoir saisir et faire saisir les réalités. . . . Pour moi je serai d'abord bien embarrassé si je me trouvai en présence d'archives communales à débrouiller de minutes de notaire à compulser, à interpréter et à recorder à une ligne générale de faits. Peu de professeurs et peu d'instituteurs sont capables de fouiller dans cette matière vivante de l'histoire et d'en retirer pour leur école et pour la science historique quelque document significatif. La Société de 1848 et la Société des Études Économiques de la révolution nous ont témoigné beaucoup de confiance en nous demandant à tous notre concours. Mais en retour nous demanderions volontiers une petite "Introduction aux recherches historiques," un Langlois et Seignobos de poche afin que nous qui enseignons l'histoire, nous sachions un peu comment on la trouve et comment on la fait.

An interesting commentary on the above is the fact that in Scotland last year, out of the four provincial training colleges, only one student was being trained as a teacher of history in the secondary school curriculum.

As regards (3) the answer is: (*a*) that the teacher must be permitted to make his own programme, as is done in science; (*b*) that the leaving certificate of the school should be accepted by the examining authorities; and (*c*) that the examination should at least be partly oral. In Scotland, at all events, I believe these aims will soon be realised.

THE STUDY OF THE MOTHER TONGUE.

By ELIZABETH LEE,
Secretary of the English Association.

THE important place that the mother tongue should occupy in our school curricula is very slowly coming to be recognised. The teaching of the vernacular is still more or less unsystematised, and although every week produces text-books dealing with some small portion of the subject according to the author's idiosyncrasies, there is as yet no one book that contains within its covers all the needful guidance.

In France these things are managed differently.

Not only has the mother tongue always formed there the basis of education in the schools, but the first professors in the land concern themselves with the methodology of the subject, and with the production of text-books for use even in the primary schools. The lectures on "L'Enseignement de la langue française, Ce qu'il est—Ce qu'il devrait être dans l'Enseignement primaire," delivered by Monsieur Ferdinand Brunot, professor of the history of the French language in the University of Paris, in 1908–9 at the "Faculté des Lettres" at Paris, and recently published, would make stimulating reading for our teachers of English. With the omission of what is necessitated by the more complicated portions of French grammar and syntax, Monsieur Brunot's methodology might easily and, I venture to think, profitably be adapted for the teaching of English, not only in the elementary, but also in the secondary schools. Monsieur Brunot insists on the great advantage to be derived from possessing mastery of the native tongue. Then, and not until then, are men able fully to understand the thoughts of others, or to express their own thoughts so that they may be accurately understood. Only when a man has entire possession of his mother tongue is he capable of taking his part in the political and economic life of the nation. Until he does that he is not, properly speaking, a man at all, nor are the treasures of truth and beauty accumulated by the poets and thinkers of his race laid open to him.

The study of language, properly directed and intelligently handled, touches almost all the other subjects of the school curriculum. Indeed, as in the days that are past the Latin grammar was thought all-sufficient for a liberal education, so in the future, since Latin will be more or less dropped, we should look to the vernacular to take its place.

I know that some teachers hold that every lesson is the English lesson, and there is much truth in that view. But I do not think that it always occurs to our teachers that every sort of lesson may be included in the English lesson. That is to say, a pupil may acquire powers of observation and reflection, ability to express himself in language suited to his thought, both in speech and writing, a large amount of varied knowledge, and some general notions of ethics from the study of English alone.

Monsieur Brunot's method has many original features. It is directed towards the primary schools, but much of it could be practised in the secondary schools. It should be mentioned here that Monsieur Brunot has not been content only to point out the way in a treatise on method, but has also written a series of practical text-books for use in the schools of France. There is one striking difference between the school books written for French children and those destined for English children. I mean that a much greater mental effort is demanded of a pupil in a French school than is the case with us. The tendency of late in our schools has been to make everything as easy as possible for the pupil, and to encourage the teacher to talk down to the supposed level of the child's mind, and to require little or no effort on the child's part to imbibe and retain what he is taught.

These books contain many new and original features. As language is a social fact, it is, like all social facts, the product of the past. It is not founded on logic or on some scientific chain of reasoning, for the arbitrary decisions of grammarians and writers and leaders of "society" have a greater influence in the making of a language than argument or reflection. Grammar, then, is not a form of logic, but a science of observation to be made by induction and not by deduction. This new method reduces grammar to its simplest terms, so to speak. There are no codified rules, no lists of endings or exceptions; the child is gently led to discover for himself from the thing he knows the things which he does not know, and, like Monsieur Jourdain and prose, learns to his surprise that he has been speaking in accordance with the rules of grammar all his life. There is not space here to illustrate in detail the simple methods suggested, but the broad lines are to classify words generally as variable (nouns, pronouns, verbs) and invariable (adverbs, prepositions, conjunctions), and always to lead to things unknown from things known.

English grammar, however, is a very simple science, and presents few difficulties. But the feature of this French method, whence, I think, teachers of English might take a useful hint, is the systematised study of vocabulary. The ignorance of our children, even as late as the age of sixteen, of the meanings of words in common use, would be incredible, did not the daily experience of inspectors and examiners prove it to be true. In the language teaching I am describing, the child is introduced each day to a fresh group of words connected with some particular thing. Here are a few taken at random: parts of the body, the limbs, domestic animals, the family, articles of clothing, names of the various workmen employed in building a house, and so on by gradual steps to words relating to the senses and sensations, to agricultural and industrial life, to the intellectual and social life, to trade, to war and peace, to means of communication, such as railways, ships, the post office, &c. In the higher classes the vocabularies include words relating to and used in the professions, such as the navy, the army, law, medicine; words used in describing intellectual operations; words connected with the sciences, literature, art, music, the theatre, religion, old age and death, progress and the future. Let us take as an example the lessons for the day when "literature" is the subject of the vocabulary. The words set down are: "Prose, poetry, inspiration, style, eloquence, speech, treatise, book, pamphlet, newspaper, review, article, essay, satire, fable, sonnet, song, history, biography, novel, tale. Epic,

lyric, didactic poem; literary, oratorical, epistolary style; literary criticism. Classical, romantic, naturalistic literature. To be inspired, to compose, to write, to edit, to rhyme, to criticise, to publish." There are numerous exercises, both oral and written, of very varied character. The reading lesson deals with the value of style, and the composition lesson with what is meant by literary charm. As a further example, we may take a vocabulary lesson dealing with "la vie morale": the words set down are: "Conscience, good, evil, duty, virtue, vice, honour, honesty, probity, modesty, sincerity, courage, perseverance. Conscientious, amiable, faithful, frank, submissive, hard-working. To love, to work, to do good, to do evil, to be patient." This is followed on later days by a vocabulary on "society," containing such words as "syndicate, committee, co-operative, collective, strike, socialism, and discussion"; on "social virtues," containing such words as "union, justice, tolerance, equality, liberty, benevolence, charity, pity, solidarity"; on "the law" and "public life."

A great advantage of the plan, especially for the elementary schools, is that the necessary text for the reading, recitation, grammar, composition, and language lessons is contained within the covers of one book, and that it includes sufficient material for two years' work. For example, on one page we find set out (*a*) the reading or recitation lesson, with oral and written exercises on it; (*b*) the vocabulary, with suitable exercises; (*c*) the language or grammar lesson, with the necessary exercises; (*d*) the dictation exercise: as the pupil advances composition is substituted for dictation. All the matter is carefully graduated in difficulty, and the exercises, wonderfully varied in form, are especially directed to lead the child to think, and to express his thoughts both orally and in writing each day a little more correctly, and with a little more charm. No mere mechanical exercise is tolerated; each one is more or less in relation to something personal to the pupil. Indeed, the exercises are planned to assure the progress of the child's mind at the same time as that of his style, and to respond to his practical needs while cultivating his brain. Grammar and vocabulary are only means to those ends.

Formal composition is not begun until the child is nine years old. Very simple exercises are first set: to choose an attribute when adjectives are the subject of the grammar lesson, to express an action when verbs are dealt with. Then follows the description of a simple inanimate object, such as a pencil; afterwards living things are described, and the child passes to narration of facts, description of scenes, and lastly to that of sentiments. In the lower classes the pupil handles only matters familiar to him, and matters with which he will have to deal in ordinary practical life: to know how to write a business letter will be more useful to the pupil of the elementary school than to be able to compose a purely imaginative narrative. Among these practical exercises are such things as to give directions about the packing of a trunk, or to order a load of wood; to ask for delay in paying a doctor's bill; to demand an extra delivery of letters in the district; to give the character of a servant; to order something from a shop, or to ask a friend to procure it for you; to ask for a post in a bank or a house of business. The exercises are accompanied by advice as to the best form for these various demands, and plans of procedure are suggested.

The whole method seems to me to be a step in the right direction, and to put language teaching on a more rational basis than it has hitherto had. After all, language is the material by means of which man expresses his thoughts. When he has great thoughts to express, and possesses the power of using the material for expression in a great way, he becomes a poet or a prose-writer. He is then using language as material just as a painter uses colour, a sculptor marble, or a musician sound. We have not all the great thoughts, or the power of expression that makes the great writer. But we can all cultivate the power of correct, clear, and pleasing expression in words of such thoughts as we are naturally compelled to express in speech and writing during the course of our lives. Such ability will make us more useful and better loved by our fellow-men, and will enable us to appreciate great literature, great oratory more fully, and to derive from them deeper enjoyment. From every point of view, the study of the mother tongue during school life on a systematic and simplified method must make for the general good. The great enemy of simplicity in teaching, at least in England, is tradition, and especially the tradition of the examinations, which compels much to be taught the utility of which is more than problematic. But there are signs that our educational leaders are beginning to perceive this, and that better times are at hand.

NEW REGULATIONS FOR CADET CORPS.

By EDWARD C. GOLDBERG, M.A.
Tonbridge School.

A POTENTIAL supply of officers for the Territorial Force having been provided by the conversion of the former Cadet Corps of secondary schools into the Junior Division of the Officers' Training Corps, it remained for the Army Council to carry the principle still further, and endeavour to secure recruits for the ranks by similar means in the lower strata of educational organisations. Draft regulations have recently been issued governing the formation and administration of Cadet Corps, in regard to which proposals we are assured officially that "the opinion of County Associations is being asked." It may be that before issuing these draft regulations, to which effect is to be given in the financial year 1910–11, the Army Council availed

itself of opportunities of consultation with the educational authorities of schools contemplated in the scheme, since two kinds of organisation are mentioned, the one affecting a corps composed of boys drawn from a school in receipt of a Parliamentary grant, the other a corps not so composed; but there is no trace in the regulations themselves of any such opinion having been consulted, or of its suggestions being adopted, and we must suppose that it is left to the County Associations to ascertain the views and obtain the advice of the schoolmasters who are competent to judge of the suitability of the regulations to the purpose in view.

Before the creation of the Officers' Training Corps, not only was the Army Council in constant touch with the schools concerned by means of the assistance of experienced schoolmasters, but also before the adoption of the system a meeting of headmasters and commanding officers of Cadet Corps was held, under the auspices of the Army Council and in the presence of the Secretary of State for War, at which the proposals were explained, discussed, and submitted for approval. Nothing of the kind has, so far as I am aware, taken place with reference to the new regulations for the new Cadet Corps, which are to produce in the ranks that result which was intended to arise for the officers by the institution of the Training Corps. At any rate, if schoolmasters have assisted the deliberations of the Army Council in the production of this latest attempt to tap a source for recruits to the Territorial Force, their advice does not appear as a resultant in the draft regulations now published. Consequently, before the County Associations return those opinions for which they are now being asked, it would be well for them to secure the aid of schoolmasters directly in touch with the situation. Any attempt to propose a scheme for the organisation of Cadet Corps in schools receiving a Parliamentary grant must fail without previous consultation with the masters of such schools.

In round numbers there are 130 schools supplying contingents to the Junior Division of the Officers' Training Corps, which is at present a "going concern," administered directly by the Army Council. There exist, besides, some forty Cadet Corps, not more than twenty of which are definitely formed by certain schools, so that the proposal of a new system does seem to be a matter of extensive scholastic importance. But under the draft regulations it is intended that the sole authority having power to grant official recognition to Cadet Corps, *or to cancel recognition already given*, will be the Territorial Force Association of the county in which the corps concerned has its headquarters: the Association will be solely responsible for seeing that all Cadet Corps, which it has recognised officially, are organised and administered efficiently; and, further, the Associations will have the power to raise new corps composed of boys drawn, or not drawn, from schools which are in receipt of a Parliamentary grant. It will thus be seen that the scheme is of prime importance to the few schools at present possessing their own corps, and is destined to be far-reaching in its scope as endeavouring to obtain recruits to the Territorial Force from the Cadet Corps of elementary or other State-aided schools. Few are at present interested; it is intended that a very large number shall be involved.

Briefly, the qualifications for official recognition are: (i) likelihood to furnish recruits to the Territorial Force; (ii) financial self-support; (iii) affiliation to the Territorial unit; (iv) obedience to the Association; (v) organisation and equipment capable of imparting efficient elementary military instruction to its members.

The following is a slightly condensed list of the chief privileges to be granted to officially recognised Cadet Corps.

I. Free issue of thirty rounds of miniature ammunition to:[1]

(*a*) *All cadets who are sixteen years of age or over*, if the corps is composed of boys drawn from a school which is in receipt of a Parliamentary grant.

(*b*) All cadets who are fifteen years of age or over, if their corps does not come under (*a*).

II. Free issue of rifles or carbines for drill, side arms, and belts for *cadets entitled to draw free ammunition.*

III. Free issue of *five aiming tubes and service rifles,* or five 0·22-calibre rifles *for every* 100 *cadets entitled to draw free ammunition.*

IV. Permission to buy ammunition.

V. Possible permission to encamp on Government ground.

VI. Possible remission of recruits' drill in cases of cadets enlisting directly from their corps into the Territorial Force.

In addition to these qualifications and privileges certain provisions must be observed by the Associations in organising and administering the corps, the most important of which are two:

(*a*) No boy will be eligible for enlistment in a recognised Cadet Corps until he has reached the age of twelve.

(*b*) A proportion of 7 per cent. of the strength of the corps will be allowed to remain, for certain purposes, on the establishment, irrespective of age: with this exception "cadets, on reaching the age at which enlistment into the Territorial Force becomes possible, cannot remain in any Cadet Corps, whether recognised or not, and their names will be struck off the strength of their unit."

Such are the main provisions of these draft regulations, and the assumption underlying them is stated officially to be that the cadet organisation in each county will be financially self-supporting; Government assistance will only be given in kind, or instruction, or facilities for

[1] Since the above article has been in print statements have appeared in the daily papers to the effect that the War Office proposes to "grant free ammunition to all cadets." This misleading error is due to the original text of the regulation, which runs thus:

"A free issue of thirty rounds of miniature ammunition will be issued to all cadets:

"(i) who are sixteen years of age, &c."

training; and the only sum to be expended by Government will be a grant of 25*s.* for every 100 efficient cadets, the money not to form a capitation grant, but to be spent "by the Associations in any way that seems likely to benefit and promote cadet organisation within the county. Funds granted for the administration of the Territorial Force may not be expended on Cadet Corps."

With reference to the last two sentences, one can only exclaim, "*Il faut en rire pour ne pas en pleurer!*"

A survey of the above regulations leads at once to the conclusion that they are entirely nugatory in the cases of the schools. Whether they will serve to attract organisations of boys' brigades and scouts to apply to become officially recognised Cadet Corps is most unlikely. To be self-supporting is to be independent; and an examination of the ludicrously inadequate "privileges" will not induce the supporters of these flourishing, useful, but at present—from the military point of view—aimless bodies to change their position with regard to the Territorial Force.

If we look at the list of qualifications, we see plainly what a magnificent thing it would be for the Empire, as well as for the Territorial Force, that officially recognised Cadet Corps should increase and multiply in schools and out of them; but we also see that the whole scheme breaks on the rock of finance. No one who has had the opportunity of observing the evils of compulsory service can seriously favour conscription in our country; but let us not commit the error of supposing that subscription can or ought to take its place. In dealing with a question like this we find ourselves on the border which separates individual generosity from general obligation. We cannot, we ought not, all to be made to serve; we all can, and ought to be compelled to pay. If the Territorial Force saves us from conscription or some kind of compulsory service, it is incumbent on the community to pay for the boon. Taxation must take the place of subscription.

Putting aside the financial difficulty, which has obviously been disregarded by the Army Council (probably because it has been misled by the fact that the funds are forthcoming for the support of school rifle shooting, boys' brigades, and similar institutions), what inducement to membership can be found in the so-called "privileges" of an officially recognised Cadet Corps? So far as the schools are concerned, we do not suppose that there is a prospect of 5 per cent. of the boys in the State-aided schools, let alone in the prospective school corps, being available for the boon of ammunition, and we hold that it would be difficult in many cases to "turn out" fifty lads on parade with more than 2 per cent. of the young warriors bearing the freely granted arms. The Statute bar of age, for which the Army Council is, of course, not responsible, is the death-blow to any scheme for the organisation of elementary military training in the schools. With regard to the brigades, &c., the grant of arms and ammunition to *all capable of bearing and using them* is the only means of sweeping these organisations into the net of the Territorial Force.

Schoolmasters are likely—at least we hope so—to be approached by the County Associations for advice and information in this matter. Neither they nor the Associations will be doing their duty if they embark wildly on the scheme of Cadet Corps offering little inducement to membership, small prospect of military efficiency, and depending for support on the already overtaxed generosity of individuals, when the expense should be shared by all. Boys' brigades and scouts should hesitate before they barter their independence for chimerical advantages of official control. A decided "No" to the Army Council's proposals, and a suggestion of the broader alternative, should in the end produce a State-supported system of voluntary service begun in boyhood, continued in manhood, which will secure both the safety of the Empire and the freedom of the individual.

LONDON'S SICK AND NEEDY CHILDREN.

FURTHER reports by the Education Committee of the London County Council indicate an extension of the good work achieved in its open-air schools at Birley House, Dulwich, Montpelier House, Upper Holloway, and Shrewsbury House, Woolwich, during 1908.[1] The experience thus gained confirms the favourable impression produced by the results achieved at Bostall Woods in the previous year. The class of children selected for these open-air schools comprised those who, by reason of poverty, neglect, heredity, or certain chronic ailments, were unfit to stand the strain of ordinary school life. And there is a pathetic significance in the fact that it was found that the inclusion of strong or robust children among debilitated and weakly ones is to be avoided, since, though such children themselves benefit greatly by the open-air life and regimen, their presence sets before the weakly an example of relatively strenuous living which proves actually harmful. Indeed, some restriction of individual activity is necessary, in order to avoid the heart-strain and attendant evils which are found to ensue whenever the too feeble body is allowed to carry out the promptings of a relatively too active mind. The daily rest of one and a half to two hours before dinner was attended with marked benefit; while, on the other hand, the absence of the long hours of sitting, and the frequent bodily movements while at "work," effected obvious improvement in the appearance and general tone of the children; appetite and energy increased, and anæmia tended to disappear. At the same time, it could not be doubted that the children benefited markedly both morally and intellectually; their "social

1 "Report of the Education Committee of the London County Council on Open-air Schools, 1908." (King.) 6*d.*; post free, 8*d.*

sense" was appreciably stimulated, and they developed distinct evidence of kindness and consideration for others.

The concrete good achieved by open-air schools in the care of children such as those selected for these experiments is so great as to justify the desire for a much wider extension of their benefits. But two great difficulties stand in the way. The first lies in the exceeding difficulty of securing suitable sites, a difficulty intensified in proportion to the overcrowding of the population which distinguishes those districts in which the need is greatest; while the difficulty of transporting such children from their homes for any appreciable distance is obvious. The second has reference to the expense of such schools, the gross cost working out at about four times as much as in the ordinary schools for each child. Against this, however, must be set the facts that these schools provide practically the only method of education by which such children can profit at all; and further, that—to make the comparison a fair one—the schools should be conducted under a settled system, and the expenditure on buildings and furniture spread over a considerable number of years.

The work carried out by the London County Council in connection with its industrial and special schools[1] might be described, without exaggeration, as a most valuable form of State insurance. For in the one case it takes children who, at a susceptible age, are on the threshold of a career of vice or crime, gives them a moral and physical education, and starts them in life on their own account under favourable conditions; and in the other, dealing with children defective or incapable, provides them with such training as shall develop, so far as is possible, that capability which they do possess, or at least provides adequate care and supervision for those who would otherwise become only a source of danger to the community.

The Children Act, which came into force on April 1st, 1909, contains provisions which have an important bearing upon this work, and must incidentally lead to an extension of industrial school accommodation throughout the country. Hitherto such schools have been largely used for children who have been charged with an offence before a magistrate. Under the new Act, if a parent be convicted of cruelty or neglect of his child, and if such parent be proved to be "of criminal or drunken habits," the child may be committed by the magistrate to an industrial school. Again, the law has hitherto allowed young children under twelve years of age to be sent to reformatories if they have been previously convicted. Under the new Act, no child under twelve may be sent to a reformatory: all children under twelve must be committed to industrial schools. Moreover, it is definitely enacted that children of twelve or thirteen, if convicted for the first time, may—if the court considers them suitable cases—be sent to industrial schools instead of to reformatories.

In these schools care is taken not only to improve the character of the children, but to train them so that on leaving they can take up some trade or occupation of a definite character. To this end, it is necessary to study the capabilities of each individual, and to teach him the trade for which he appears to be best adapted. Moreover, when the lad has attained a suitable age and sufficient skill in the branch of industry which he has been taught, a situation is found for him; and the method of supervision employed enables the Council to see that he satisfactorily and steadily pursues his calling. The industrial-school child is therefore really more favourably situated than are the majority of those in the public elementary schools, of whom so many, though leaving with good character and good ability, fail to secure permanent employment; and, owing to lack of superintendence or interest in their work, often drift into idle and loafing habits—"the breeding-grounds of criminal propensity."

Of the several difficulties attending this work, the most prominent is the influence exerted by parents, who are apt to look upon their children's detention as a punitive rather than a preventive measure. Even when the lads have been sent out to employment, parents endeavour to induce them to return home, and good and permanent situations are thus sometimes abandoned for a precarious life of odd jobs and casual labour—from which the parent looks to reap some pecuniary advantage. Another serious difficulty lies in the fact that the period of detention in the school is, in many cases, too short for successfully counteracting the evil influences to which the children have been previously subjected. Within the three or four years which represent the average duration of a boy's stay at Feltham or at Mayford have to be concentrated the only endeavours made to correct pernicious habits of mind and body "acquired during the most impressionable years of a child's life." As soon, therefore, as a boy reaches the age of fifteen, in the case of Feltham, and fourteen and a half at Mayford, his disposal becomes a matter of anxious consideration. His personal antecedents are reviewed, the parents' circumstances at the time, and the lad's own industrial and educational attainments are duly weighed. In cases where the parents' character is unsatisfactory, a method of disposal is adopted in connection with which their influence or interference may be escaped. For this purpose, the discipline and character training afforded by enrolment in the Army bands is extremely valuable; and, next to this, farm service. Farming is taught at both schools, and no difficulty is found in obtaining situations. From Feltham School thirty-two boys entered sea service, having obtained nautical instruction on a vessel erected in the school playground. The reports received on the subsequent career of the lads thus started in life show excellent results. Similarly, owing to the nature of the training given in the Gordon

[1] "Report of the Education Committee of the London County Council on Industrial and Special Schools, 1908." (King.) 9d.; post free, 10½d.

House Girls' Home, no difficulty is experienced in securing good and suitable situations for the girls on leaving. Since the establishment of the home in 1897, sixty-seven girls have thus been sent out, of whom only one has been lost sight of. Emigration also affords an excellent opening, and is taken advantage of whenever possible.

Accommodation provided by the Council in its schools for the blind, deaf, physically defective, and mentally defective children was increased by 697 places during the year ending March 31st, 1908. The total number of such children on the rolls and certified for admission represented nine per thousand of the total number of elementary-school children scheduled in the London area for the same period. This does not include 273 epileptic and 627 imbecile children, for whom no provision had been made.

The report of the Education Committee on the medical treatment of the children [1] coming under its supervision is largely concerned with the still-debated question as to the establishment of school clinics, to which attention has been directed in these pages on more than one previous occasion. A cursory examination of the evidence, statistical and topographical, which has been collected on this subject, suffices to show the imminent need for some concerted and far-reaching scheme, capable of dealing with the huge mass of preventable disease which, even in its earlier stages, exercises so malign and paralysing an effect on the poorer class of London children, so heavily handicaps them in life's battle, and plays so far-reaching a part in racial deterioration. Taking one item only—that of defective teeth, a condition which accounts for much immediate impairment of health, directly contributes a susceptibility to other specific maladies, and ensures definite physical disability in later life—it appears that while the collective hospital accommodation of the metropolis is unable to deal with more than about 200 cases per week, or, say, 10,000 annually, at least ten times this accommodation would be needed "to relieve even a part of the children whom school dentists would select as requiring it."

On the other hand, the geographical position of the hospitals seriously militates against their usefulness for this purpose, even were they possessed of the accommodation and provided with the staffs required for such an extension of their work. A map was specially prepared to show (1) the position of the hospitals in London capable of dealing to some extent with the cases of physically defective children; (2) the number of children of the elementary-school class in each electoral area; (3) the number of such children in each borough area. "This map showed clearly that practically the whole of the chief hospitals were in the central districts of London, while the child population was frequently at considerable distances from any hospital." In view, however, of the magnitude and the heavy cost of any scheme equal to dealing adequately with this problem, the committee recommended that, for the present, the Council should utilise existing institutions as far as possible; but that in districts in which no suitable institution exists, and in districts where, within a reasonable time, it shall have been found impossible to make the necessary provision by an extension of existing institutions, the Council shall consider whether, in default of other means, it shall itself make provision for the establishment of some form of school clinic.

[1] "Report of the Education Committee of the London County Council on the Medical Treatment of Children attending Elementary Schools. (King.) 5d.; post free, 10½d.

"RICHARD II."

A Ramble in London.

By Ernest Young, B.Sc.
Headmaster of Lower School of John Lyon, Harrow.

ONE of the set books in English literature for the Cambridge Senior Local examination, 1909, and also for the Oxford Junior Local examination, 1910, is "Richard II." Those candidates who are studying this play, and live in or within easy reach of the metropolis, might profitably spend a Saturday morning rambling through a part of the capital, trying to identify the sites of some of the scenes in the play. The following route is suggested:

Descend at Mark Lane Station (Metropolitan and District Railway) and proceed into Great Tower Street.

Act V., Scene 1, is laid in "London. A street leading to the Tower." The Queen enters with her ladies and says:

> This way the King will come, this is the way,
> To Julius Cæsar's ill-erected tower.

It is probable that the street referred to may have been Great Tower Street, which leads to Tower Hill, and so to the Tower of London. In the absence of direct evidence, we shall assume this for the moment to have been so.

Walk down Great Tower Street and Eastcheap until the statue of King William at the end of King William Street is reached. This statue marks the site of the old Boar's Head Inn, beloved, according to Shakespeare, by the son of Bolingbroke. There were no taverns in Eastcheap in the time of Henry IV., but Shakespeare's audience would certainly picture this spot in their minds when in Act V., Scene 3, Bolingbroke bids his lords—

> Inquire at London 'mongst the taverns there,
> For there they say he daily doth frequent
> With unrestrained loose companions,
> Even such, they say, as stand in narrow lanes
> And beat our watch, and rob our passengers.

Go down Cannon Street, bear to the right up Budge Row, and then to the left into Watling Street. It was in this street that the palace stood in which the action begins. (Act I., Scene 3. King Richard's Palace.) The palace referred to was the Tower Royal, one of those strange old palatial forts that were fairly common in mediæval London

—half fortress, half dwelling. Stow says, "It was of old times the King's house, but was afterwards called the Queen's Wardrobe."

The same authority states that after Richard had dispersed Wat Tyler's mob in Smithfield, "he, his lords, and all his company entered the City of London with great joy, and went to the lady princess, his mother, who was then lodged in the Tower Royal, called the Queen's Wardrobe, where she had remained three days and two nights right sore abashed. When she saw the King, her son, she was greatly rejoiced, and said, 'Ah! son, what great sorrow have I suffered for you this day.'

"The King answered and said, 'Certainly, madam, I know it well; but now rejoice and thank God, for I have this day recovered mine heritage, and the Realm of England, which I had near lost.'"

Richard was certainly in residence in this palace in Watling Street five years later, and this may very well be the building referred to in Act I.

Turn to the right behind St. Paul's Cathedral until Newgate Street is reached. Go along Holborn Viaduct as far as Holborn Circus. Here turn sharply to the right down Charterhouse Street. On the left hand is Ely Place.

> *Bushy.* Old John of Gaunt is grievous sick, my lord.
> Suddenly taken; and hath sent post haste
> To entreat your majesty to visit him.
> *K. Rich.* Where lies he?
> *Bushy.* At Ely House.

Act II., Scene 1, is laid at Ely House, the site of which is now marked by Ely Place. Ely House was the London residence of the Bishops of Ely, and in it John of Gaunt died in 1399. He had probably taken refuge here after the burning of his palace at the Savoy. The building was stolen from the Bishops by Queen Elizabeth, and presented to her favourite, Sir Christopher Hatton. A great deal of it was demolished during the Commonwealth, and eventually the whole of the palace disappeared. The small watchman's gate at the entrance to Ely Place marks the spot where the Bishop's gateway stood. Fortunately, the chapel belonging to the palace escaped the Great Fire of 1666, and still remains. The entrance is on the left-hand side of Ely Place. The church, now dedicated to St. Etheldreda, consists of a crypt and a chapel above, and is a very good specimen of fourteenth-century architecture. The crypt preserves its original oaken roof, while the chapel above contains two very fine windows. Outside the entrance to the church itself is a holy-water stoup that was dug up during a recent restoration, and is believed to be pre-Saxon. Those unaccustomed to the by-ways of the City will be surprised and charmed with the quaint cloisters, which are planted round with fig-trees, and form a veritable haven of rest amongst so much that is noisy and sordid.

Return to Holborn Circus, and a little way farther on, on the left, is Fetter Lane (Faitor= beggar; this is a former resort of the licensed beggars of London). Go down Fetter Lane to Fleet Street. Continue along Fleet Street and the Strand, past Wellington Street, and presently, on the left hand, Savoy Street is found. Turn to the left down this street, and in a few yards another green oasis and a church, the Savoy Church, are discovered. This is the site of the Duke of Lancaster's palace, where Act II., Scene 2, is laid.

The Duke of Lancaster's palace was the Savoy Palace, built originally by Simon de Montfort. It came into the hands of Henry III., who presented it to Peter of Savoy, the uncle of his wife. John of Gaunt, Duke of Lancaster, took possession, and very considerably enlarged and improved the building. Amongst his guests were Chaucer, Froissart, and Wycliffe, who must often have passed near this spot. The palace was destroyed during Wat Tyler's rebellion, and remained in ruins until it was restored and converted into a hospital by Henry VII., who built Savoy Church. This church stood at the north-west end of the palace buildings, the latter stretching right down to the river's edge and away to the east beyond Wellington Street. Some of the structures were standing at the time when Waterloo Bridge was made, but were destroyed during the construction of the approaches to the bridge.

The church can be seen between 11 a.m. and 1 p.m., and between 2 and 4 p.m. every day. The interior is modern, the old woodwork, &c., having been destroyed by fire in 1864. It will interest the student to know that in this church the poet Wither is buried, and that in the reign of Charles II. the memorable Savoy Conference for the revision of the Prayer Book was held here.

Go down Savoy Street as far as the Embankment. Take the tram to Westminster Bridge. Opposite are the Houses of Parliament. Cross the road and pass to New Palace Yard. The low and older building in view is Westminster Hall. (Open on Saturdays, 10 a.m. to 3.30 p.m. Tickets are obtained gratis at the entrance to the Houses of Parliament near the Victoria Tower.)

Act IV., Scene 1, is laid in this very building. Westminster Hall was founded by William Rufus in 1097, but was rebuilt in its present form by Richard II. in 1399. Strangely enough, the first public event that occurred therein after the restoration was the deposition of the restorer. The dimensions are said to be greater than those of any other apartment in Europe unsupported by pillars. The roof, of chestnut wood, is curiously constructed and adorned with angels holding shields on which appear the arms of Richard II. and of his patron saint, Edward the Confessor. Below the windows is a stone frieze on which may be seen a hart couchant and other devices of the unfortunate monarch. In this building, one of the earliest of our parliaments declared Edward II. to have forfeited the crown. Here Richard II. was deposed, Charles I. condemned to death, and Oliver Cromwell saluted as Lord Protector.

Within these walls Wallace, Sir Thomas More, the Earl of Essex, Guy Fawkes, and the Earl of Stratford were sentenced to death. In the same building the Seven Bishops and Warren Hastings were acquitted.

An appropriate ending to this ramble would be made by visiting Westminster Abbey. (Open daily, except during the hours of divine service, until 4 p.m. in winter and 6 p.m. in summer. A charge of 6*d.* is made for admission to the chapels except on Mondays and Tuesdays.)

In the chapel of Edward the Confessor, Richard II. and his wife are buried. The wooden canopy over the tomb bears an old and curious representation of the Virgin.

> But whate'er I be,
> Nor I nor any man that but man is
> With nothing shall be pleased, till he be eased
> With being nothing.—(V. 5, 38–41.)

BRITISH ASSOCIATION AT WINNIPEG.

By HUGH RICHARDSON, M.A.

WINNIPEG will be to some of us a memory of fresh breeze and sunshine, wide streets, and spacious lawns. The Educational Science Section was housed sumptuously in the Legislative Chamber.

The first item on our agenda was the presidential address of the Rev. Dr. H. B. Gray, warden of Bradfield College. He has particularly interested himself in the fate of English public-school boys in Canada, and is no believer in the efficacy of the ancient classical curriculum plus the worship of athletics as a complete preparation for life, either in the Colonies or anywhere else. Dr. Gray has just purchased a house and two thousand acres of land about twenty-two miles south-west of Calgary, and ten miles west of De Winton, on Fish Creek. Ten boys from Bradfield are expected to come out at Easter, 1910.

Prof. Sir J. J. Thomson, in his presidential address, spoke from his Cambridge experience. The Canadian students coming with 1851 Exhibition scholarships have done well, but the excessive competition for scholarships in Cambridge is an evil. When scholarship is too specialised, the study of one subject for a long time dulls enthusiasm. There are more failures from this lack of enthusiasm than from want of cleverness. The boundaries between the sciences are arbitrary. Physics and mathematics both suffer by separation. The interchange of students between the universities of the Mother Country and the Colonies should be encouraged.

Prof. L. P. Jacks (editor of the *Hibbert Journal*) spoke on Moral Education. The moral needs of the Empire demand a higher type of man. The section agreed with Prof. Jacks in believing that the virtues cannot be imparted one by one, nor according to a fixed pattern. What is needed is the idea of an end, and a method which shall dominate the teaching of all subjects. To the present writer the discussion still seemed to show a complete absence of anything that could be called strict evidence that the results desired are produced by any of the means proposed.

In his address to the Physiological Section, Prof. E. H. Starling touched upon similar topics from the point of view of natural selection. He regards man as the latest result of a continuous process of evolution; higher types are required, and the race has to be educated to new conditions by the ruthless destruction of millions of individuals until only those survive whose mental machinery can be trained to almost automatic social conduct.

Prof. Hugo Münsterberg, of Harvard, in his address on Education and Experimental Psychology, distinguished very clearly between the aims of education which are ethical, not subject to experimental criticism, and the methods employed to realise those aims. The methods can be tested by experiment. Experimental psychology cannot tell us the goal, but may determine the means to be employed. Experiments have now been made on memory, on fatigue, on the association of ideas, and on the motion of the eye in reading; in every case the results involve suggestions for the teacher. Prof. Münsterberg's was a most important contribution to the science of education. We hope he may be encouraged to come to the British Association when it meets again next year in Sheffield, and, if possible, to give a more detailed demonstration of his experimental methods and a fuller statement of the results obtained.

Prof. R. E. Dodge, of Columbia University, spoke in the joint discussion with the Geographical Section. Regional work will probably be based on the study of certain selected phases of physical geography, and will culminate in a treatment of certain selected regions from a commercial point of view.

On our way out our boat was boarded in the St. Lawrence by envoys from McGill University at Montreal, bringing a cordial invitation to visit the departments of chemistry, engineering, and physics in the city, and also the Macdonald College at St. Anne's in the country. At McGill, Prof. Rutherford showed the simple home-made apparatus employed in his original experiments on radium. The objects of Macdonald College were lucidly explained on the spot by Prof. Robertson. The college is intended for the sons and daughters of Canadian farmers. There are three departments: for the men, scientific agriculture; for the women, the science of home life; and for intending teachers, a normal college course, with opportunities of profiting from the scientific course. Measured in dollars, the college cost a million. Their agricultural experiments have extended to a million grains of wheat sown separately by hand. We have been much impressed by the earnestness and enthusiasm of Prof. Robertson, who spoke to us again in Winnipeg, showing how the triple course at the college aims at a sound basis for Canadian prosperity.

Macdonald is only one of the agricultural colleges of Canada. We were also welcomed at the newly established Manitoba College outside Winnipeg.

One afternoon the Educational Science Section listened to Dean F. F. Wesbrook and other educational leaders of Winnipeg on University Education. This question is here *sub judice*; a Royal Commission has been appointed, but has not yet reported. At present the higher teaching is chiefly in the hands of the denominational colleges, with the exception of the science schools which are a university undertaking. A gift of 100,000 dollars to Wesley College was announced during our week in Winnipeg. There is an evident wish for even greater endowments to extend the work of the University.

The walls of our section room were adorned by a collection of drawings done by the children at Miss Gilpin's Village Hall School at Weybridge, Surrey. These represented birds and flowers and features of English social life. By invitation of Mr. Marvin, the normal students of Winnipeg came one afternoon when our section was not in session to see these drawings, and to hear Mr. Marvin's exposition of the merits of informal against formal methods of teaching drawing.

In another building, the Carlton School, were shown specimens of manual work by Winnipeg school children. This school was the starting-point for a little tour of some city schools arranged by Mr. D. McIntyre, acting for the Winnipeg School Board. The fittings of the school buildings present several points of note. The fire escapes are in the shape of an iron tower, inside which is a smooth spiral down which children are very ready to slide for amusement—cost 800 dollars. An elaborate Waterbury time-marking arrangement is attached to clocks. The heating apparatus is self-regulated to maintain a temperature of about 70° F. College lecture rooms are fitted with comfortable arm-chairs, the right-hand arm of each being broad and flat so as to carry a note-book. Advantage was taken of our visit to lay a foundation-stone. There are thirty schools in Winnipeg, and three under construction; these have 270 class-rooms and an enrolment of pupils for 1908 of 15,500. More than £100,000 is now required for two collegiate or high schools.

The schools had not actually begun work at the date of this visit, but the medley of races could be seen in the school playground, where some attempt is now being made to supervise holiday amusements for those children who have not had a country holiday. In one Winnipeg school, twenty-three nationalities are represented. Medical inspection is being started. Education is neither compulsory nor universal. Of immigrant races, some of the best educated and most progressive are the Scandinavians, particularly the Icelanders. For arranging visits to schools we are also indebted to Mr. W. Sargent, Assistant Minister of Education for Manitoba.

St. Boniface across the river is the French quarter, and here Father Joseph (of the Order of St. Mary) showed us a school at work. In the youngest classes our English was hardly intelligible to the boys, nor their French to us. In the top class, boys of fifteen to sixteen were ready to talk freely in either language. Their course tends towards a commercial education. At the end of the school day we heard songs and recitations in both languages, and a little drama.

CHEMISTRY AND CHARACTER.[1]

By Prof. H. E. Armstrong, Ph.D., LL.D., F.R.S.

WE have been led to recognise that our scheme of popular elementary education is a terrible failure, that its whole tendency has been to emasculate our population; yet at the very time that we are making this discovery we are beginning to force our higher education along lines which experience shows must be ineffective—along literary lines. I should be the last to deny that there is an undercurrent of improvement perceptible but this is directed only by sporadic influences and is in no way favoured by most of those in authority. We are still suffering at the hands of those who have been our persecutors in the past—the clerics, who control most of the schools and whose outlook is almost as narrow as it ever was. The saving grace of science has in no way entered into their souls—how can it? The universities make no attempt to secure their redemption. London of late years has even reversed the enlightened policy the university so long pursued, and has allowed Latin to figure as alternative to science, not as the complement of science.

If properly taught in schools, chemistry will afford a means superior to all others, I believe, of training faculties which in these days should be developed in every responsible citizen. No other subject lends itself so effectively as a means of developing the experimental attitude of mind—the attitude of working with a clearly conceived purpose to a desired end, which is so necessary to success in these days; and if care be taken to inculcate habits of neatness and precision and of absolute truthfulness, if care be taken to teach what constitutes evidence, the moral value of such work is incalculable. But to be effective it must be done under proper conditions, systematically; the time devoted to the work must be adequate; I would even advocate that the subject be allowed to come before conventional geography and history and other unpractical subjects, assuming that the training is given in a practical way and with practical objects in view, not in the form of mere lessons learnt by rote; if taught in the form of mere didactic lessons it is as worthless as any other subject as mental discipline. Let me add that I would confine the

[1] Extracts from the presidential address to the Chemical Section of the British Association at Winnipeg, August, 1909.

teaching to a narrow range of problems but make it very thorough with reference to these.

Five-and-twenty years ago I made my appearance as an advocate of what has been dubbed the heuristic method—the method which entails putting the learner in the attitude of inquirer, in training the pupil to inquire always into the meaning of what is learnt. I believe it to be in principle the only true method of learning. The idea has found favour almost generally but the progress made in applying it has been slight—and this was to be expected, as teachers were few and far between who could carry the method into execution; moreover, so few teachers will allow their pupils to learn: they are too impatient and insist on teaching them and on doing the work of teacher and learner—in fact, in these days, the learner is a rarity; examinations have almost destroyed the breed. If here[1] you desire that your children shall grow up virile men and women with some honesty of purpose left in them, you will end and not mend a system which is sucking the very life-blood out of the youth in the Mother Country—you will insist that your children shall be taught little but learn much.

When studied as a special object, chemistry, in particular, is one of the subjects which must be worked at long and persistently—mere technical skill counts for so much and so few seem to possess the ability to become skilful chemists; in no other science does the element of understanding and an indefinable power of appreciating the character of changes as they occur play so conspicuous a part—in no other science is the faculty of judgment more necessary. In practice, the chemist in works is constantly called upon to exercise his judgment—he is only too often called upon to judge from appearances of conditions which are deep-seated; he is everywhere the works physician in fact. It is therefore necessary that he should be highly trained and thoroughly versed in the art of inquiry. The men who in my experience have been successful are those who have learnt to think for themselves and who have been capable independent workers—sufficiently broad-minded and sufficiently practised in their art to be able to turn their attention in any desired direction; I should add that they have been men who have learnt to read—a much neglected art. Much has been said and written of late on the subject of technical training which is of value as bringing out the various points of view; the problem is a very difficult one, owing to the great number of interests to be considered and more especially the very uneven and often inferior quality of the material to be trained. The great danger of specialised technical training is the tendency to make it too narrow. Success in practice depends not merely on knowledge of subject but also, if not mainly, on the possession of certain human qualities which are not usually developed in the technical school and cannot be tested by examination—it is unnecessary to specify them.

[1] In Canada.

It is undeniable that in England for many years past chemistry has suffered from the recognised fact that there has been little money in it—parents have been led therefore to prefer other careers for their sons and the subject has not secured its due proportion of intelligence and is suffering in consequence. Too many of those who have entered works have had neither the intelligence nor—to speak plainly—the presence and manners that are required to secure confidence. The presence of men of gentlemanly bearing and instincts, who have received thorough training in science, is urgently needed at the present time in many of our manufacturing establishments, to take the place of foremen of the old type, who have learnt all they know in the works and whose conceptions necessarily lack breadth; it is almost impossible to convince such men that improvements are possible; too often they adopt a selfish attitude and advisedly retard progress.

In Germany the chemist and the engineer have been placed on an equality and required to work together, with results which are altogether satisfactory. We need to adopt a similar practice. Any attempt to fuse the two into one will meet with failure, I am persuaded; they are called upon to work from different points of view—they need to be in sympathy and to understand one another but their work is complementary. I have watched engineering students closely during years past and am satisfied that, on the average, they represent a type of mind different from that of the chemist—the tendency of the one is to be constructive and of the other to be reflective: the analytical work done by the chemist in the laboratory is but the means to an end in the same way that the work done by the engineer in the drawing office is. Our future engineers should study chemistry and chemists should study engineering, in order that they may understand one another and work together—not in order that they may supplant one another.

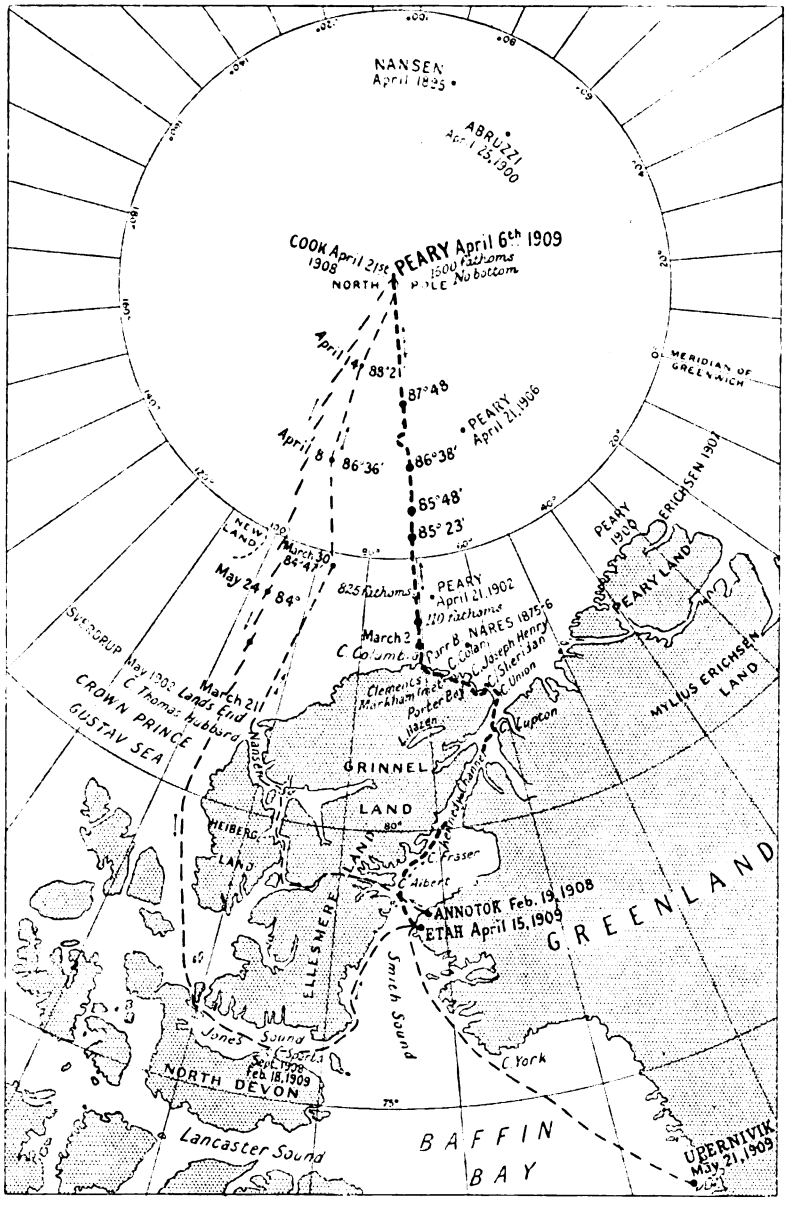
POLEWARDS: THREE CENTURIES OF EFFORT.

By B. C. Wallis, B.Sc., F.C.P.

In the May issue of The School World attention was directed to the reports of the Shackleton South Polar Expedition in relation to the geography of the class-room, and a note was made of the contrast between the regions at the two Poles. It was pointed out that the approach to the North Pole was easier than the approach to the South Pole, and consequently that the six degrees of latitude further south covered by the brave party of four was a commanding achievement. At that time the record for furthest north was twice as far from the Pole as the record for furthest south established by Shackleton, and thus it appeared probable that the South Pole would be reached first; and now in less than six months reports from the Arctic area state that the Pole has been reached, and this news

provides for the teacher a second admirable opportunity for emphasising the geographical facts concerning the polar regions by reference to doughty deeds accomplished by men still living.

The Two Poles.—The explorer who attempts to traverse Antarctica suffers from many disabilities in comparison with his colleague who attacks the fastness of the northern ice. His journey takes him far from civilisation; he is forced to make a base far from human help; and he finds no inhabitants on the Antarctic continent who are prepared by their daily life within polar climatic conditions to yield him assistance. He therefore has to take from the north to the Antipodes dogs and other draught animals, sledges, and clothing, in addition to all the food he needs; if he meet disaster, there are no neighbouring Eskimos to whom he can turn for relief. Should he have the misfortune to lose large portions of his supplies of pemmican and other foods, or of his oil or other fuel, he has no chance of finding adequate supplies of bear or deer meat for himself or of walrus meat for his dogs, or, in the second place, of finding coal, as he would have in the north. In Antarctica the climate is more severe, so that a dash for the South Pole means an almost continuous struggle with the cold and the blizzards, which frequently confine the traveller to his tent for one or more days; to traverse the inland ice means sledge-work of an almost heart-breaking character. On the Arctic Sea, however, the ice is easier, and the wind less strong, as was found by Cagni, in the Abruzzi expedition, and by Peary lately; in fact, the nearest approach to the difficulties that are met in the south occurs when the explorer attempts to traverse the inland ice of Greenland. The Arctic traveller meets one danger which appears to be entirely absent in the south: the difficulty presented by "leads" of open water which open and close with the changes in the direction of the wind, and may open suddenly almost at his feet, or may close with such force as to pile up an ice ridge in front of him; but this danger is compensated by the presence of Eskimos and food-animals such as the bear and the musk ox, which almost reach as far north as latitude 80°. The greater difficulty of the southern expeditions is shown by the difference in the average times taken by the explorer to traverse a degree of latitude. Shackleton took about $6\frac{2}{3}$ days on his outward journey, while Cook covered a degree in 4 days, and Peary took $3\frac{3}{5}$ days for the same distance. One other point of contrast is important: both Scott and Shackleton reached their limits in January, about midsummer; while Nansen, Cagni, Cook, and Peary attained their highest latitudes in April, shortly after the beginning of the Arctic day; in the north some work can be done during the



times of moonlight in the winter, but this is almost impossible in the south.

The Shores of the Arctic Ocean.—The exploration and surveying of the shore lands of the Arctic Ocean has occupied three centuries. Before 1600, Spitsbergen and the south-east of Baffin Land were known; in the seventeenth century further discoveries were made in the neighbourhood of Spitsbergen and Greenland and near Bering Strait; while the shores of Eurasia were explored during the eighteenth century, and the American shores during the nineteenth century. In this way the mapping of the fringe lands of the Arctic Ocean left as a work for the last three decades the area within the circle of latitude 80° N. and the interior of the islands which lie within the Arctic circle. The teacher of geography will find that the newly awakened interest of the general public in matters boreal will stimulate the interest of the children in the story of these three centuries of coast-wise exploration, with particular attention to the story of the attempts at the North-east and North-west Passages. This transitory interest will be useful when he recounts the expansion of world-knowledge due to the efforts of the traders and the whalers, who, stimulated by the purely economic hope of gain, attempted to reach Cathay, or to trade with Russia, or to reap the golden harvest of the fur and whale trades; in this direction the published accounts of the trading done by Cook with the Eskimos will add reality to his story of the earlier days. His account of these trading parties will emphasise the special features of the tundra with its skin-deep carpet of vegetation and flowers, which is so beautiful that it drew from the Norwegians, who first beheld it, exclamations of astonishment at the fact that such a land was uninhabited by white men, who, they thought, ought to prefer so seemingly rich a country to the barren homeland which they knew. The stories of the whaling parties, of the walrus harpooning, of the bear killing, of the netting of wild fowl by the Eskimos, and the account of the migrations of the reindeer and their slaughter by the natives as they forded the rivers, will all gain new importance from the new interest. Finally, his description of the Eskimos, the Samoyeds, &c.; of their "tupiks" and their "igloos"; of their methods of fishing and sledging, supported by the atmosphere which is provided by the ever-present ice, and its attendant possibilities of death from cold or from starvation, and the sensational element due to the many dashes Polewards and to the establishment of new records, will be more easily realised on account of the help given to Peary by the Eskimos whom he has trained to polar exploration during so many years. The keynote of this period is, however, the haphazard way in which the problem of polar work was attacked; the sledges of the explorer were frequently drawn by Europeans; the coast-line was frequently mapped incorrectly when the traveller was deceived by the mist or the peculiar climatic conditions; and to British children the Franklin episode will appeal both from its tragedy and from the steady persistence of the would-be rescuers.

The dreams of a great sea lane to the magic East, to be traversed by many merchantmen laden with the spices and the precious commodities to be gained in the Eastern trade, drove mariners into the Arctic, and led to the work which they performed; but when finally this dream was found impossible of realisation, then men were able to take stock of the newly discovered lands and to decide what were the real problems of the Arctic, and to attack these in the new scientific spirit which was gradually being adopted in all investigations of new problems; the days of chance and the unexpected were at an end.

The Polar Ocean.—The work done during the scientific era of the last three decades has been mainly in connection with the polar ocean and its islands. One of the facts previously determined was that the ice which covers the polar sea was more likely to be separated from the shores of the continents by belts of open water off the great rivers, the comparatively warmer waters of which prevented freezing in their estuaries. Consequent upon this, Nordenskiold showed in his voyages in 1875–9 that a ship could be navigated through the North-east Passage. A second similar fact was that the western sides of Spitsbergen and Greenland were more accessible than the eastern sides; this fact is implied by the modern phrase the "winter gulf of warmth of the North Atlantic." As a result of this, the habit had been for those who voyaged Polewards to enter the Arctic regions on the western edges of these lands, and before 1880 it had been established that the ice met on voyages by these routes was usually drifting. It was argued from this that the circumpolar area was oceanic, and that there was little land within 10° of the Pole.

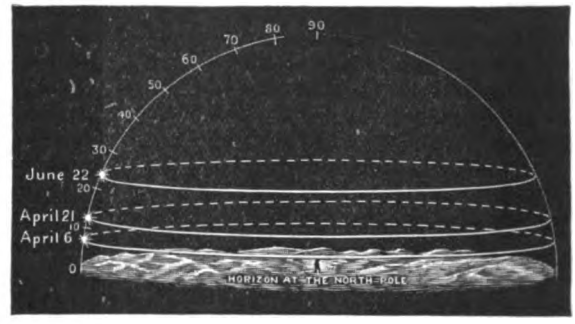
The finding, at Julianehaab, in south-west Greenland, of relics of the *Jeannette*, which sank off the Siberian coast, led to the conclusion that the main direction of the drift was across the vicinity of the Pole from the Bering Sea side towards Greenland and the Atlantic Ocean. This was a scientific hypothesis, and the crucial test was applied in the voyage of the *Fram*, in which Nansen drifted across the polar sea, and from which he started on the sledge journey over the ice in which he reached his furthest north in April, 1895. Nansen's voyage provided sufficient information, in conjunction with the isolated work of others, for a map to be made, showing the edge of the continental shelf of Eurasia and the limit of the polar ocean on that side, and it became evident that on the eastern side of the Pole the ocean was at least 1,500 fathoms deep. It is proposed to sail or drift the *Fram* again across the ocean along a track, if possible, nearer the Pole than Nansen's track. In this way our knowledge of the depth, temperature, and salinity of the Arctic Ocean north of Eurasia will be completed.

This is one of the problems of the near future; akin to it is the exploration of the American side

of the basin, where the land limit at the continental shelf and the steep sides of the basin have not yet been fully determined. Some information on this point will be available when the complete records of the work of Cook and Peary are published, as the latter has already reported that the continental shelf probably occurs at the big "lead" which he encountered, and that the depth five miles from the Pole was more than 1,500 fathoms. A problem of rather a different nature has been attacked recently in the scientific survey of the islands. Jackson spent 1,000 days in determining the nature of the Franz Joseph Archipelago, and Sverdrup spent four years (1899–1902) in exploring the islands of the north-west of Greenland, while Erichsen completed the exploration of the north-east coast of the latter island, and Amundsen explored the islands in the neighbourhood of the magnetic pole. The latter was located so long ago as 1831, but Amundsen increased our knowledge of the magnetic conditions in the neighbourhood of the magnetic pole, and concluded his journey by working his ship across to the Pacific Ocean, thus being the first to take a ship through the North-west Passage.

The problems in connection with the interior of Greenland have been attacked in a preliminary fashion by the journey of Nansen over the inland ice from one side of the island to the other, and by the journeys of Peary across the north-western corner of Greenland, when he established the position of the most northerly point of this island, a piece of exploration which is held by some geographers to be as important as the attainment of the Pole itself. In connection with the scientific work which has been carried out in all the recent expeditions, two facts may be noted: first, that the results are so voluminous and hard to codify that they are not published until long after the return of the explorer, and the public, as a rule, evinces but little interest in them; and, secondly, that an expedition may do extremely useful work in connection with one or other of the polar problems and yet, if the sensational element of a dash Polewards is absent, the explorer may return home without exciting public enthusiasm. An example of this occurs in connection with the recent return of the Scottish Arctic expedition, the safe return of which to Leith has passed almost unnoticed.

The Recent Explorations.—The sensational element due to attempts at a North-east or North-west Passage or to mere dashes Polewards is, however, of importance to the teacher, as it serves as a means of directing the attention of the children to the scientific work which is expected nowadays from the explorer of the frozen zones. The brief accounts so far published by Cook and Peary give descriptions of the conditions encountered on the journey, of the drifting of the ice, and of the effect upon it of the wind and its changes; they show the practicability of life on the polar ice for well-equipped and well-supported parties of observers, and promise great results from scientific exploration on this ice in the future. Additional information as to the depth of the polar basin, and as to the climate of the Pole, will be forthcoming when they publish the complete narrative. Their records of the winds will extend our knowledge of the atmospheric circulation, and will help to determine the permanence or otherwise of what has been called the "polar calm"; and finally they will provide the first accounts by actual observers of the appearance of the sun at the Pole itself. Peary speaks of the sun's path in the sky as being almost horizontal, and his final results will confirm the theoretical conclusions of the astronomer which are given in the accompanying figure and note, sent to the author of this article by Prof. R. A. Gregory: "To an observer at the North Pole, the apparent path of the sun or any object on the celestial sphere is parallel to the horizon. Neglecting the effect of refraction by the atmosphere, the sun appears on the horizon at the spring equinox—March 31st—and seems to travel around it. Day by day it comes more and more above the horizon, travelling up a slightly inclined spiral until an altitude of $23\frac{1}{2}°$ is reached on June 22nd,



Apparent paths of the Sun at the North Pole on April 6, April 21, and June 22.

after which it apparently travels down the spiral path and reaches the horizon again on September 23rd—the autumn equinox. On account of refraction, however, the sun is seen above the horizon before March 21st and after September 23rd. The declination of the sun—that is, the angular distance north or south of the celestial equator—is given for every day, and the hourly change also, in the *Nautical Almanac* and similar publications. At the North Pole the observed altitude of the sun at any time, when corrected for refraction and instrumental errors, is the same as the declination tabulated in the *Nautical Almanac*. On April 6th, when Peary reached the Pole, the corrected altitude observed at noon should have been 6° 18′ 55″, and on April 21st, when Cook was at the Pole, it should have been 11° 44′ 5″, both these values being the tabulated declinations of the sun on these days. To determine the altitude of the sun at these low angles is very difficult, and the error involved may be considerable; but provided that the explorers made careful observations and took the necessary precautions to secure as accurate results as their instruments permitted, geographers are not likely to

quibble over the few miles which may prove to have separated them from the actual Pole. Of course, a single observation is insufficient. What should be done would be to take a series of observations of the altitude of the sun every three hours or so throughout one or more days. If the change of altitude, after the various corrections have been applied, is the same as the change in declination as shown in the *Nautical Almanac*, the observer must be at the Pole. It is to be hoped that the diaries of Cook and Peary will show that such a series of observations was made, in addition to daily records of the sun's altitude before the Pole was actually reached."

Peary reports that he spent thirty hours at the Pole taking observations and photographs, so that he has probably fulfilled the conditions as to accurate observation set out above. Finally, the world will rejoice with Peary, who has accomplished the task he set himself twenty years ago. Addressing the Royal Geographical Society in 1903, Peary laid down what he called his polar creed as follows: "(1) The North Pole should be attained. (2) The only practical route to the Pole is the Smith Sound route. (3) The attainment of the Pole is peculiarly an object for American pride and patriotism." Since these words were uttered Peary has been again into the interior of Greenland, battling with wind, cold, and starvation, and has now accomplished the task for which he has been training during so long a time, and his great result, like that of Shackleton, demonstrates the need for preparation on lines of effort previously made, and justifies the continuation of the scientific exploration of the last thirty years.

OXFORD LOCAL EXAMINATIONS, JULY, 1909.

Hints from the Examiners' Reports.

THE reports of the examiners upon the work of candidates in the Oxford Local examinations held in July last have been published by the delegates, and are obtainable from Messrs. James Parker and Son, Oxford. As in previous years, we have extracted from these reports the remarks which indicate aspects of school work to which attention may usefully be given by teachers, whether preparing candidates for the examinations referred to or otherwise.

Several points commented upon in the reports of many examiners are mentioned by the delegates in a special notice. Candidates are warned against the very common fault of writing irrelevant answers. This fault is due partly to carelessness in reading the questions, partly also to the desire of candidates to bring in information which they have learned by heart. It is pointed out that vague answers are useless; and that the use of slang expressions ought to be carefully avoided.

The examiners in the various languages find that there is a widespread habit of learning by heart translations of passages from the prepared books. This practice, besides being educationally harmful, impairs the value of the examination as a real test of knowledge of the languages. Teachers are warned that oral instruction may be overdone. In French, for instance, pupils must be familiar with reading as well as with listening to the language, or else they are liable to make innumerable mistakes whenever they attempt to write French words. The Board of Revising Examiners directs special attention to a defect which seems due to an abuse of oral teaching. With the principles of oral teaching the examiners are in entire sympathy: but there can be little doubt that candidates are taking advantage of it as a means of dispensing with the labour of accurate study. This has been most noticeable, during the present year, in the case of languages, and especially of the French language. Many papers which showed a general acquaintance with linguistic structure were remarkably inaccurate in point of detail: they confused terminations of similar sound, they made elementary blunders in accidence, and they gave the impression of superficial and unscholarly work. A few years ago the chief danger in the teaching of our secondary schools was a pedantic insistence on minutiæ: there is now no less danger from a reaction to the opposite extreme.

Arithmetic.

Junior.—It is satisfactory to note that the old type of candidate, whose sole idea was to produce the answer, and who sent up a bewildering mass of figures without order and without explanation, is rapidly disappearing. The answers which involved the working of decimals were the least satisfactory, the work often being made more troublesome by the reduction of the decimals to fractions. A question on metric measures showed that many candidates are still unfamiliar with this system, and it was quite the exception to find one who knows what a litre is. Among the answers to a question on compound interest the formula for the amount was frequently used, but the contracted method of multiplication, which would have shortened the work appreciably, was very seldom correctly employed.

Senior.—Though but few shortened their work by the use of significant figures when aiming at approximate results only, the methods employed were generally more concise than usual. Despite the notice in the regulations, some were ignorant of the number of pfennigs in a mark, but the question on the metric system was usually well done.

History.

Junior.—The general impression of the examiners in *Ancient History* is that in the vast majority of cases some elementary text-book has been studied without much illustration. The natural result is confusion even on the elementary facts contained in that book. As regards the general questions, practically nothing is known about the two most characteristic Roman institutions, the government and the army. Some few answers showed a real attempt to understand the Roman legion, but even the best seemed to think that the legion of Caesar's time was the same as that of Scipio's. It would be better if candidates

habitually used atlases when reading history. The knowledge of the positions of places was in many cases very poor.

Spelling, grammar, and style in the work on *English History* leave very much to be desired. The examiners direct attention to the dangers of a purely oral system of teaching. Many candidates seem to have devoted themselves simply to learning lecture notes by heart. The effect of this is seen in answers being written in jerky disconnected sentences. It also has the effect of stereotyping answers to such an extent that blunders due to candidates not having caught a word correctly from the lips of a lecturer are reproduced in paper after paper from a particular centre.

There was more evidence than usual of the *understanding and grasp* of the *object* of questions. In this respect (not, of course, in mere *knowledge*) this year's "junior" exercises approximated to the standard reached by the "seniors" a few years ago.

Senior.—The general impression gathered from this year's papers in *Ancient History* is that the simple story of such events as the Punic Wars is fairly well known, and the dates are for the most part accurate. Such a foundation is absolutely necessary for dealing with more general questions, and it is worth while to lay special stress on this point, as there seems to be an idea that all that is needed in a general question is pages of talk about nothing in particular.

The examiners in *English History* recommend: (i) more careful study of the questions themselves: many marks were lost by overlooking the exact point of the question—*e.g.*, some "accounted for" the failure of the Jacobite movement by giving the story of it, and for Clive's fame by relating his adventures; (ii) less use of tabulated form of answer; (iii) more compression: there was a great tendency towards garrulity and irrelevancy.

In *Early English History*, the work as a whole shows a real interest in the period. In criticism it may, however, be observed: (i) The questions relating to the period of Roman conquest and occupation were least well answered: chronology was hazy, and many candidates entirely failed to distinguish between Roman legates and emperors. (ii) Vague generalisations unaccompanied by concrete examples were frequent, in some cases becoming positively unintelligible—this was particularly so when constitutional points were under discussion. (iii) Many candidates failed to read the question with due care, while others declined to answer the question actually set, but wrote at considerable length on topics more or less closely connected therewith.

English Language and Literature.

Preliminary.—More attention should be paid to: (i) the names of punctuation marks, of which the spelling is almost invariably wrong; (ii) parsing. At the same time candidates should be told to avoid *irrelevant matter*, such as the introduction of explanations when examples alone are required.

Junior.—The weak point in the *Composition* paper was usually the paraphrasing: the passage set was generally treated as a text, to which explanatory notes were to be added, or on which a short essay was to be based; it was comparatively rare to find an attempt to draw out the poet's meaning and express it in other words.

The essays which gave the story of one of Shakespeare's plays were mostly excellent, and showed a genuine appreciation of their theme; sometimes, however, the restriction to *a comedy* was ignored. The other essays were not so satisfactory: "Robinson Crusoe" was chosen by many candidates who had a very slight acquaintance with the book itself; the descriptions of a summer holiday were commonly marred by tawdry rhapsodies on the beauties of nature, and these passages were marked by a sentimentality and unreality that would have exposed the writers to a charge of insincerity, had they been older; while the treatment of this topic and of the insular position of Great Britain frequently degenerated into a lengthy repetition of the statements of some geographical "Reader" which had been carefully committed to memory. Many candidates fail to realise that in an essay, even if they cannot be expected to show much originality, yet they have an opportunity for drawing upon their own observation and their personal experience.

As to the *Grammar* papers, the punctuation was indifferent, and very few candidates gave anything like adequate reasons for the various stops. The insertion of two stops in one place was fairly common, and the correct spelling of "comma" or "colon" was extremely rare. Very many of those who mentioned the uses of the subjunctive mood showed by their examples that they did not understand what they had been taught.

Referring to selected poems of Tennyson, the examiners state that there is a tendency to answer questions at too great length: pupils should be warned to confine their answers strictly to the points raised, and to remember that the longest answer is not necessarily the best. Many of the quotations given to show Tennyson's skill in "making the sound of his verse fit the sense" have no connection with *sound* at all, but are derived from an editorial note on his "power of pictorial effect."

Senior.—While grammar, spelling, and punctuation in the papers on *English Composition* are all good, a very large number of the candidates seem to have little idea of when to open and close a paragraph.

In *English Grammar* the analysis was in the great majority of cases well done. Grammatical terms were generally known, though there was often evidence of definitions learned by heart and imperfectly understood. On the whole the greatest need revealed by the papers examined would seem to be not more knowledge of the rules of English grammar, but more training in the intelligent use and application of the knowledge gained.

As to work on *Set Books*, the most serious

fault is incapacity to give a succinct and intelligible explanation of such selected passages as may be expected in every paper of questions on literature. Often the candidate has the required knowledge, but in trying to express it he raises a cloud of superfluous words without direct point or force which obscure instead of explaining. Some practice in the art of lucid explanation ought to be included in every candidate's work.

GEOGRAPHY.

Preliminary.—There is a complete ignorance of the railway system of India: too much attention is paid to teaching the candidates to write picturesque descriptions of the scenery or imaginary pictures of the lives of the inhabitants; too little attention is paid to familiarising the candidates with the routes traversed by the different railway systems, and the reasons which induced the selection of the particular routes. Greater efforts should be made to make the study of geography an exercise of the reasoning faculties and not merely an effort of memory.

Junior.—The quality of the work submitted showed a distinct improvement on that of the last few years; the answers were more closely related to the questions, and less irrelevant matter was introduced. The improvement was particularly noticeable in the section on the geography of the United Kingdom, although the outline map, especially in the case of English towns, was perhaps not so well filled in by the majority of candidates as might have been reasonably expected. A regrettable tendency towards the use of vague generalisations, and a consequent lack of definiteness in the candidates' answers to the more general questions, was frequently observed, and should be guarded against. Some of the answers appeared to indicate that the visual memory of candidates is not yet adequately trained by instruction from the map.

Senior.—There is still great want of co-ordination of different parts of the subject. The chief point is still the division of candidates—apart from those who show little or no knowledge of any part of geography—into those who have studied several principles and those who have studied the maps. Much of the best topographical work was done by candidates who were very weak in everything else, but more good work in, *e.g.*, physical geography was done by candidates who were unable to apply their knowledge to any particular region. For example, there were many excellent accounts of the climate and products of a typical equatorial region by candidates who were unable to specify any district situated near the equator.

Many candidates answer something not asked; *e.g.*, when asked to describe the voyage of a sailing ship from England to India they describe the course of a steamer. This failure to study the questions is perhaps responsible for many rambling digressions; *e.g.*, a question that definitely asks about the wet and dry portions of Australia is often answered by a long account of the history, population, &c., of that country. Many candidates have a fair idea of map-drawing, but the majority do not connect the maps with definite lines of latitude and longitude; *e.g.*, many candidates stated that the whole of India is within the tropics, and not a few asserted that the equator crosses Australia.

The knowledge of climate is reaching a higher standard than formerly, but a more accurate knowledge of the great wind-systems of the world is desirable, as is evidenced by the very loose application of such terms as "trades" and "anti-trades."

The general situation on the globe of important regions was not realised by a rather large proportion of the candidates; many mistakes might have been avoided if the course of the equator and one or two parallels had been approximately known.

CLASSICS.

Junior.—In *Latin* the obligatory unseen translation was not done well on the whole, rather from disregard of elementary rules of the language than weakness of vocabulary. Of those who attempted the optional unseen only a small proportion made even general sense of it. Many were extremely ill-advised to try it. Candidates would be wise to include either of the set books in their year's reading so as to have an alternative if they find the unseen too hard. Some who did the general unseen piece well applied no intelligence or recollection of the most elementary rules of language in the harder piece.

While several of the translations from English into Latin reach a high standard of excellence, a large number display weakness. The chief defect is a disinclination to attempt to turn a sentence when the exact Latin synonym is not known. Instead of trying to find simple words which convey an equivalent meaning, many candidates have invented absurd words by "latinising" the English, and so detracting considerably from the merits of their work.

In *Greek* also the examiners say it is a great pity that more teachers do not recognise the value of unseen translation, and give their pupils, from a very early stage, practice in it. Only a small proportion of the candidates attempted the unseen. Of those a certain number gave a very good account of themselves, but of the rest many plainly failed from having had no practice in working out for themselves the shape and construction of a sentence.

Senior.—In *Latin Prose Composition* the work of the candidates showed clear signs of endeavour, but in many instances the specimens submitted were so thickly sown with blunders that they could not from any point of view be regarded as satisfactory.

FRENCH.

Junior.—There has been a very marked improvement in all parts of the work, with the conspicuous exception of the irregular verbs, in which general weakness appeared. The answers sent up show a great increase in command of lan-

guage, without, however, a corresponding increase in grammatical accuracy.

Senior.—The composition in the vast majority of cases was disfigured by elementary mistakes in accidence and syntax; in the free composition the vocabulary used was very elementary, the French was of the baldest kind and showed no attempt at idiom. A very fair percentage answered correctly the question dealing with syntax, and the sentences involving idiom indicated that most candidates had some knowledge of the constructions required. General weakness was shown in the verbal forms. The impression gained was that grammar on the whole was weak, and that far more precision is required in the simplest forms of accidence.

The prevalent faults are mainly these: disregard of tense without any justification, omission of small but important words, confusion of active and passive, inversion of subject and object, and other errors of syntax. Many, if not most, of these errors could be avoided by the exercise of greater care.

With regard to the general style of the English, good idiomatic and accurate translations are not frequent. The larger proportion of candidates who follow the French closely are not successful in getting the proper English equivalent for the French word, but take its most common and usual meaning; in other words, their English vocabulary is at fault, and lacks the fullness which would allow them to select the proper word.

Mathematics.

Algebra: Junior.—A large proportion of candidates showed facility in the more mechanical work; but it was evident that many, even of the more competent, did not grasp the ideas expressed by the symbols and words that they used. "Factor" and "term" were employed very loosely, the signs of subtraction and division treated as interchangeable, and brackets inserted or omitted haphazard. It seems that teachers might with advantage spend more time in what may be called lessons in "translation" from ordinary English into algebraical language (and the reverse). The question on "graphs" revealed that comparatively few candidates had been taught to apply the graphic method to the solution of practical problems.

Senior.—Questions depending upon mechanical accuracy were well done; but where the solutions required thought, as, for example, in questions involving an understanding of dimensions, considerable weakness was shown.

The extraction of a square root was frequently wrong, owing to a failure to arrange the terms in their proper order before the work was begun.

There was, perhaps, more than the customary weakness in dealing with the signs + and −.

Considerable attention is evidently given to the drawing of graphs; but the work submitted was seldom complete—candidates often giving an algebraic rather than the graphic solution required, or, on the other hand, omitting to give any indication that they clearly understood the method.

Higher Geometry: Preliminary.—The proposition was not well done. Many candidates measured where calculation was required, and attempted cumbrous calculations where measurement was asked for. Angles were generally measured accurately, but few seemed to know the shape of a prism, and few were able to calculate a square root correctly.

Geometry: Junior.—The most frequent error was the statement that two triangles are congruent if they have two sides equal and also *any* angle. Even if the statement was justified by the fact that the triangles were right-angled, attention was seldom called to this justification.

The protractor was not used with sufficient accuracy, errors of 2° or 3° being not infrequent. Definitions were not well given: the description of a prism was usually quite unintelligible, while a parallelogram was defined by the very properties which the candidate subsequently proved. In justifying a construction for drawing a perpendicular to a line from a point without it many candidates assumed results just as difficult to establish as those which they were asked to prove, instead of employing first principles, as is desirable in such elementary work.

Senior.—The proposition concerning parallels was not well done, nor was the definition of parallels at all well given. The majority of the attempts to give Euclid's definition were not successful; many other definitions were quite worthless, being often mere illustrations, or giving far more than could be included in a definition. Many definitions which the candidates appeared to have been taught were rather postulates than definitions. The proposition was often proved by quoting an equivalent one. In all propositions dealing with parallels the proof should be made to depend on first principles, or some recognised axiom.

Mensuration: Junior.—Logarithms were used less generally and with better judgment than in former years, and it is being rightly understood that those candidates who have not thoroughly learned how to use logarithms properly are better advised to avoid them altogether. It is, however, greatly to be desired that a really practical knowledge of this very simple method of calculation should be more widely cultivated. An instance—a by no means uncommon one—of the misuse of logarithms was the calculation of the expression $80 \times 40 \times 7$ by taking the logarithms of the separate numbers, the result thus reached being very often quite wrong. Pupils should be warned against such an obvious misapplication of logarithms.

Trigonometry: Senior.—The proofs given of elementary fundamental propositions, such as

$$\sin (90 + A) = \cos A,$$

were not good; it is essential that the definitions of the trigonometrical ratios of an angle should be the same for acute and obtuse angles, if such

proofs are to be consistent. Triangles were usually assumed to be equal without proof, and in general there was a tendency to take for granted the construction and properties of quite complicated geometrical figures. Proofs by projection were very common, but as a general rule it was evident that no definite principle ruled the work, and difficulties of sign were avoided. Unless the question of sign is worked out, such proofs often assume the point which is expected to be proved. Questions dealing with the properties of triangles were well done, except that proofs of identities were often arranged so as to end with $0=0$.

SCIENCE.

Junior.—In *Botany* many candidates confused carbon and carbon dioxide, nitrogen and nitrates, barometers and thermometers.

The papers as a whole in *Experimental Science* gave the impression of a want of a sufficiently thorough knowledge of the subject; thus, although Boyle's law was as a rule correctly stated, it had apparently in many cases been learned by heart without being understood. A number of candidates made use of technical and scientific terms without having any idea of their meaning. Dealing with the work as a whole, there is evidence that many of the candidates require more practice in exercising their powers of observation, and in carefully writing out what they have observed.

The question set in the *Practical Chemistry* paper to test the powers of observation and *description* was badly done. Candidates seem to be very reluctant to believe that "no action" can be the result of a definite experiment which they are asked to make.

It is curious to note how few candidates taking the *Heat* paper can really distinguish the essential from the accessory facts in a physical determination; more stress is laid on the use of a "steam-trap" in determining the latent heat of steam than on taking the temperature of the contents of the calorimeter.

Many papers in *Sound and Light* showed an imperfect understanding of the terms in use. The points which seem to give most trouble are, the law of inverse squares, and experimental proofs and exercises on the laws of refraction. A large number of references to the "centre of curvature" of a lens indicates confusion of ideas as to the distinction between lenses and mirrors.

Senior.—Very few of the candidates in *Practical Chemistry* gave any equations for the reactions concerned in the various tests, and it would be an advantage if, after the analysis is completed, equations for the involved reactions were given. There was sometimes a lack of order in the performance of the tests, and a description of the substance, with an account of its solubility, which should preface the detailed analysis, was often omitted.

The work of the candidates in *Electricity* was for the most part very creditable. There was little to complain of in the way of irrelevance or diffuseness. Still, the necessity for conciseness and precision of statement cannot be too urgently impressed upon candidates in a subject like physics. A good deal of the looseness of expression that occurred was probably due to a want of training in mechanics.

PERSONAL PARAGRAPHS.

TOO late for mention in the September issue of THE SCHOOL WORLD occurred the death (on August 25th) of the Rev. Dr. James Bellamy, late president of St. John's College, Oxford. It will be remembered he resigned his office on June 24th. He was born in 1819, and during his ninety years of life saw many and great changes, and himself became a trusty link between the old and the new. He was vice-chancellor during three years of my residence in Oxford, and I have reason to remember the laugh he raised at my expense when, in reading out my name on my matriculation paper written by myself, he exposed the carelessness of my caligraphy by calling out a name which bore but the faintest resemblance to the surname under which I was christened. Bellamy's parody stuck to me as an eke-name so long as I lived on Isis' bank. His father was headmaster of Merchant Taylors' School, London; he was educated at the school, and was a lifelong lover of it and of the parent City company. Elected a scholar of St. John's, Bellamy took a first in mathematics and a second in classics, was ordained, and became a college don, music figuring largely among his active interests. At the end of 1871 he was elected president in succession to Dr. Wynter. As head of a house, says the *Times*, he was "an energetic, strong, but never autocratic ruler" and "a first-rate man of business." During his time St. John's had to go through financial straits owing to agricultural depression, but the growth of North Oxford saved the situation. In early years he was Lord Salisbury's private tutor, and as the recognised head of the Conservative party in Oxford he was on friendly terms with the Chancellor. Before his death, both from length of years and from width of experience he was the most interesting man in Oxford. "He remained young to the last." He made no personal enemies, so completely free was he from self-assertion or personal ambition. With Dr. Bellamy passes away from Oxford its best representative of the Victorian era.

* * *

IT is grateful to hear that the influence of headmasters on local history does not always pass unnoticed. The Rev. A. F. Rutty, on retiring, after twenty-six years' service, from St. John's, Leatherhead, has been presented with a cheque for £260 in recognition of "his keen interest in the welfare of the neighbourhood." Recently the town of Rugby expressed its indebtedness to Dr. James for his interest in the town, and I feel sure Berkhamstead would acknowledge its debt

to Dr. Fry. Local relationships are no mean part of the cares of the heads of our larger secondary schools.

* * *

Mr. William Henry Hadow, who has been appointed principal of Armstrong College at Newcastle-on-Tyne in succession to Sir Isambard Owen, is a man of great versatility. I well remember attending his lectures introductory to philosophy at Worcester and still have by me (in one of those many Oxford note-books which we preserve on the very remote chance of our being able some day to peruse them again) notes of Hadow's excellent work. He was well known as a good musician, and has composed and written much on musical subjects. In literature his *magnum opus* is probably the "Oxford Treasury of English Literature." Altogether he is a man of such intellectual power as was bound to make its mark.

* * *

Possibly it is not too late to refer to the deaths of two excellent public-school masters by which Eton and Marlborough are much the poorer. Both Mr. H. F. W. Tatham, of Eton, and Mr. A. H. Beesly, of Marlborough, were stimulating teachers, good athletes, and men of more than common achievement in literature. Mr. Tatham lost his life by a fall in the Alps. He was remarkable for the width of his learning and the strength of his memory. Fitted by character, powers, and accomplishments for a more public career, he was content to devote himself to educational work. In collaboration with Mr. Arthur Benson, he edited "Men of Might," a book of short biographies. He was educated at Eton, became an assistant-master there in 1886, and house-master in 1898. He was cut off in the heyday of his career.

* * *

Mr. Beesly had retired some time from his teaching work, but always identified himself with Marlborough, of which he was an assistant-master for many years. His athletic fame was chiefly in connection with racquets, but he threw himself heartily also into cricket and football. By his lively interest in history and English literature he stimulated his sixth forms; and the sincerity of his character made him a general favourite. Thousands of schoolboys have read his little epoch book on the Gracchi, Marius, and Sulla, though fewer are acquainted with his lives of Danton and Sir John Franklin. In poetry he showed to the best advantage as a writer of spirited ballads.

* * *

The teaching staff of Merchant Taylors' School (which has recently lost the Rev. J. A. Airey and the president of St. John's, Oxford) has suffered further loss by the death of the Rev. James Ivo Ball, and by the appointment of the Rev. S. T. Saunders to succeed Mr. Airey in the rectory of St. Helen, Bishopsgate. Mr. Ball joined the staff in 1882 under Dr. Baker. Mr. Saunders has for many years been chief mathematical master, and many a suffocating underground journey have I travelled in his company on the way from the suburbs to our work in the City.

* * *

Mr. Norman James, an old Mill-hillian, has published a centenary history of Mill Hill School (1807–1907). He has an interesting story to tell of the emphatic ups and downs, the disasters and successes of the now famous Nonconformist public school. The most salient feature of the history is, perhaps, the bad effects of a meddling committee, which had not enough of the public-school spirit to allow its headmasters to govern the school in their own way. Mill Hill is now so firmly established under a vigorous headmaster and a competent staff that it can afford to smile at the exceptional vicissitudes of its past.

Onlooker.

PRESENT-DAY TEACHING OF GEOGRAPHY.[1]

Modern tendencies in geographical instruction turn in two directions: (i) the inculcation of the "human note," using physical geography as a base, and (ii) the working of problems and exercises. But the former is chiefly to be attained by means of the latter. Of old —and not so very long ago—a man passed as a teacher of geography if he told the class that the main line of the Midland Railway north from Leeds ran to Carlisle, and, if he knew more of his subject than most, added "*via* Hellifield." Nowadays he sets the class to work on an outline map and an atlas. They must shade in the land more than 600 ft. above sea-level; they must note where, in the Pennines, the land falls below this level. Quite naturally, in the *noting*, they "discover" the Aire Gap; they become engineers "on their own," and the laying down of the M.R. route becomes a consequence following on a natural cause; the "human note" has been struck, and the lesson has been learnt. More, it is not likely to be forgotten, as a mere isolated fact usually is, and it has been learnt in such a way that its principles can be applied to similar conditions all over the world.

This is all very simple and obvious, but thereby hangs a tale. The whole teaching of geography

1 (1) The New Outlook Geography. "How People Live." By W. C. Brown and P. H. Johnson. 251 pp. Maps, diagrams, and illustrations. (Harrap.) 1*s.* 6*d.*

(2) Practical Modern Geographies. "A Geography of the British Isles." By Dr. A. Morley Davies. xi+353 pp. Maps, diagrams, and illustrations. (Macmillan.) 3*s.*

(3) Practical Modern Geographies. "Practical Exercises in Geography." By B. C. Wallis. xxii+184 pp. Maps, diagrams, and illustrations. (Macmillan.) 2*s.* 6*d.*

(4) Pitman's Geography Readers. "Foreign Lands." Anon. xxxii+258 pp. Maps and pictures. (Pitman.) 1*s.* 9*d.*

(5) Cambridge Country Geographies. "Somerset." By F. A. Knight and L. M. Dutton. xi+192 pp. Maps, diagrams, and pictures. (Cambridge University Press.) 1*s.* 6*d.*

(6) Black's School Geography. "Geographical Pictures." Series viii., Mountains. Letterpress by S. M. Nicholls. Three packets of six pictures each. (Black.) 6*d.* a packet.

(7) "A Sketch of Historical Geography." By Keith Johnston. viii+232 pp. Maps. (Stanford). 3*s.* 6*d.*

has undergone a change. The subject is no longer classed as mere "memory" work—a list of capes here and of bays there, where this place is, and that river runs; the why and the wherefore have to be examined, conclusions have to be deduced, and—in a word—geography lives as a "reasoning" subject, a "science," if you like, directly in touch with the workaday world. As a natural result, it is no longer a subject which can be put into the hands of any teacher on the staff. Most good schools now refer it—as they have done all subjects save "English" (save the mark!) for years—to a specialist more or less. Some recent publications, which we append (p. 382) and number from one to seven, are worth considering, in that some of them are indicative of the present movement to improve the teaching of geography. The first three, for example, in the very names of the series of which they are parts cater directly for the new school; No. 6 does indirectly; Nos. 5 and 7 may be called supplementary aids to geography; No. 4 is of an old type. Let us attempt to appraise their respective values.

No. 1, "How People Live," is adapted to children *aetat.* 9–11. Half the book is devoted to the United Kingdom and half to foreign countries. In these days of easy communication and universal newspapers, it is absurd to keep the young child for ever grinding away at the "Homeland." The foreign countries are, of course, done very sketchily, and, quite rightly, leave much to the teacher. The whole book is good and to be commended. Its title strikes the "human note" at the beginning and never misses it for an instant. Throughout, cause and consequence, consequence and cause, are insisted upon. Questions and easy problems and exercises are everywhere; illustrations are not mere pictures, but *do* illustrate, and are referred to in the text. The full-page illustrations have two chapters of special questions all to themselves—a section which will, we think, be as popular as any in the book. There are drawbacks and defects, however—minor, certainly, in that they do not spoil the general tenor of the book, but major in that they irritate the teacher. The exercises and questions are too much "lugged into" the text. The authors see this themselves and apologise for it in their preface, but the irritation remains. It is as if the teacher were credited with absolutely no initiative. Moreover, we are sure no boy of eleven cares to be pulled up as follows: "The skins of nearly all animals can be converted into leather by steeping them in water containing tannin. *Name animals which are especially suited for supplying the huge amount of leather used in this country.* There are very many substances which contain tannin, the best known being," &c. (p. 95). Of the pictures, too, some of the etched ones are not very convincing, and all the photographs, though capitally printed, are too small for anything but the most obvious questions. The "food" exercises at the end of the book (pp. 227 *sqq.*) are neither very exhilarating nor accurate. To shade all the United States as supplying us with nearly 50 per cent. of our wheat would (1) make a boy forget his lessons on climate and its influence on production, and (2) blind him to the fact that the U.S.A. send us less and less wheat proportionately every year now. It was less than 30 per cent. in 1908, though the States are, of course, still our largest *flour* suppliers. Actual mistakes in the book are few and far between, but we should like to ask the authors what is the "Greek word meaning *central city*" from which metropolis is derived?

Nos. 2 and 3, meant for older pupils—middle and higher forms—are naturally on a higher plane. They are books of a very similar type, No. 3, of course, being much more general in its subject-matter than No. 2. Both are obviously based, so far as their method goes, on the first book of the series ("Introduction to Practical Geography," Simmons and Richardson), and have carefully followed their excellent pioneer. They, as much as any present-day books, show the strides which have been made in school geography of late. The only question is whether one cannot have too much of exercises and problems—for here is almost nothing else. Dr. Davies certainly follows up his exercises in each lesson with a general, and most useful, *résumé* of their subject-matter. Mr. Wallis for the most part lets his speak for themselves. Both are very strong on cause and consequence—"The group of moors north and east of the Ribble looks very similar on the orographical map to those on the south, but only tiny villages are seen among them, no main roads or railways; and the geological map gives the explanation—there is no coal here" ("British Isles," p. 196)—and both are therefore to be strongly recommended. On special points one might observe that (i) in the "British Isles" there is a little too much geology, and a great overcrowding of names for ordinary school purposes (certainly for ordinary school atlases) in both maps and text, and that (ii) the "Practical Exercises" supply a two years' course only. A feature of the latter book is the number of questions inserted from recent examination papers at the end of each paper. No one can help being struck with the preponderance of "reasoning" (and therefore reasonable) as compared with mere "memory" questions. It shows that the examiners of the present day are up to the times. Another feature—and an excellent one—is the work on "selected areas" (pp. 120 *sqq.*). Maps of the areas are set, and *conclusions are to be drawn* from them. These are followed by additional exercises on "Descriptive Geography"—passages from the well-known "Highways and Byways" series of Devon and Cornwall, N. Wales, Sussex, the Lake district, E. Anglia, with each of which a photo and a map are given—bits of practical geography which are as interesting as they are educative.

We have dwelt at some length on the first three of the list of books, for they directly reflect the modern tendency in geographical teaching.

The others we can dismiss briefly. Two of them, Nos. 5 and 7, we have called supplementary aids to geography, and as such, interesting though they be, claim no special attention in an article on one phase of geography teaching. No. 5, "Somerset," is one of a well-known series of county geographies, which might almost as well be termed county histories. It is well done, though somewhat choke-full of matter, and marred in at least one instance by a blemish of the first importance—the Gulf Stream myth in all its pristine nakedness (p. 66). No. 7, the Keith Johnston, is an excellent book for the teacher. It is a reprint of part of a well-known work, and has been brought up to date (except in the matter of Lieut. Shackleton's achievements). Its maps, showing the gradual discovery and partition of the globe, are speakingly beautiful. Moreover, it has a charming appreciation of the unfortunate author by a charming writer and master-geographer, Sir Clements Markham. Both these books, 5 and 7, are more suitable for the school library than the class-room. No. 4, the "Reader," is a reversion to an old type, the "Reader" pure and simple, the high-water mark of which type is to-day represented by Mr. Mackinder's well-known books. This one, however, is not very impressive. It is occasionally out-of-date, its pictures often have no particular bearing on the text, it has lists of capes and rivers by way of summary—as if the pupils could not do this themselves, if necessary, from the atlas—it has, of course, nothing in the way of exercises, and it is sometimes inaccurate. According to it, or its maps, St. Elias is still the highest mountain in N. America, Panama is still part of Colombia, and the Trans-Siberian Railway is still in process of construction across Manchuria. Finally, No. 6—Black's Pictures—has much to commend it. All pictures are useful in teaching geography. They raise interest, they are aids to realisation, and they are full of suggestions for questions and exercises. Accordingly, the "New Geography" makes much of them. And these are good pictures. Picture 14 in this series, Vevey and the slopes above, is an excellent example. The drawback is that they are rather small ($6\frac{1}{2} \times 4\frac{3}{4}$ in.), and one cannot by any means see on them all that the letterpress assumes should be seen. It is unfortunate, by the way, that this same letterpress, which is obviously addressed to the teacher, should begin with a split infinitive, and end with an advertisement. The cost of the packets, too, may be prohibitive. To make them effective, each member of the class should have one—*i.e.*, 1*s.* 6*d.* for the eighteen, and only one small subject—mountains—covered thereby. Moreover, being only loose paper sheets, the life of each paper in the hands of an ordinary healthy schoolboy will be, to say the least, precarious. We prefer lantern-slides. Still, these Black's pictures are undeniably good, and in the hands of a good teacher will do effective work.

A good teacher! ay, there's the rub. It applies all round. Give a good cricketer a bad bat and he will still be useful—more useful than a bad cricketer with a good bat. The "new geography," after all, is just as dependent as the old on the teacher, be the text-books as modern and as full of note-book work as would satisfy a Board of Education inspector.

RECENT BOOKS ON EDUCATION.

A PROFESSOR of education, unless his title be further defined, either implicitly by himself, or explicitly by the authority that appointed him, is very much a professor of things-in-general; and so we find that professors of education, like other serious thinkers and workers in the educational field, tend to become known as cultivators of some special portion of that field. The portion to which Prof. Foster Watson, whose latest production[1] lies before us, has manifestly devoted himself heart and soul is that which relates to the history of the English educational system. We say advisedly "that which relates" to the subject, for no one knows better than Prof. Watson that the time has not yet arrived for writing that history, and that his work, from the nature of the case, is spade-work. We cordially agree with the view expressed by the author in his preface, to the effect that the object of the historian of education is not so much to show what we in our day may learn from the past, as to show how our forefathers adapted their educational measures to the social, political, and other needs of their time—and, we may add, how the present may be explained by a study of the past. An interesting introductory chapter makes it clear that attention to modern subjects first came about, not in the public grammar schools, whose subjection to authority made them homes of conservatism, but rather in connection with the education of the nobility, the merchant class, tradesmen, and craftsmen. Following this general introduction we have a series of chapters upon the beginnings of the inclusion in school curricula, down to the close of the seventeenth century, of English, history, geography, drawing, science, mathematics, and modern languages.

The abundance of bibliographical and antiquarian detail with which the author provides us from his ample stores of erudition will hardly be to the taste of many of the readers to whom he presumably makes appeal; but we have already said that the book is not so much history as the materials out of which history may some day be made. Here is no ordered structure, marked by unity of design and proper subordination of parts; but rather a cartload of bricks—most of them, we should judge, of excellent quality. The style of the book is clear, but we trust that in the second edition such phrases as "pioneering suggestions" and "the less conspicuous anonymous [treatise]" will be severely handled. It is

[1] "The Beginnings of the Teaching of Modern Subjects in England." By Foster Watson. (Pitman.) 7*s.* 6*d.* net.

somewhat unfortunate, too, that the list of "errata" should contain more errors than any other page in the book.

Turning rather abruptly from the past to the present, we find one of the "modern subjects," the beginnings of which are traced by Prof. Watson, dealt with practically in an anonymous volume on the teaching of the mother tongue.[1] The book is a sound piece of work, and makes a most acceptable addition to the scanty literature we possess on this important subject. Though we do not commit ourselves to all the details, we like the author's plan of teaching young children to read, and we note with unmixed approval his implied condemnation of the over-elaborated methods now sometimes employed. His remarks on the teaching of spelling show no acquaintance with recent experimental work, but at any rate they are pervaded by common sense. The mistakes usually made in the teaching of composition are clearly pointed out, and excellent suggestions are offered for their removal; whilst grammar, we gladly note, is put into its right place as the handmaid of composition rather than an independent study. We cordially recommend the little book to teachers in elementary schools and lower forms, and we think it well worth the attention of training-college lecturers.

We turn now from practice to theory. There was certainly room for a book which should sum up in a convenient form what is known about genetic psychology, as defined by the author of the work here noticed.[2] Mr. Kirkpatrick is already known in this country by his "Fundamentals of Child Study," and he here attempts an exposition of the development of mind "from the lowest species of animals to the highest races of men." To have compassed this large aim in a volume of moderate size, and at the same time to have written in a stimulating manner so as to have made the perusal of the book a genuine bit of training in scientific method, would, we think, have been almost a miracle. It was perhaps inseparable from the author's design that the reader should be presented with a large number of generalisations for which he has not been prepared—*e.g.*, that he should be told, without even a single illustration to support the proposition, that "animals whose safety depends upon perceiving the direction of a sound usually have the external ears movable."

Another difficulty inevitably experienced by a pioneer writer on such a subject is the need of inventing new technical terms, or of extending the connotation of old ones. It seems to us, however, that Mr. Kirkpatrick's extension of the meaning of the word "intelligence" is not a happy stroke. He makes it the equivalent of "adaptive activity," so that the process of digesting one's dinner becomes a process of intelligence. Is it not better to reserve the word at any cost for the altogether unique fact of *knowing*? We must thank the writer, however, for his effort, "tentative," as he himself truly says, to bring together a great number of facts relating to the extremely large subject with which he deals. Teachers will be chiefly interested in chapters ix. and x., on "Types of Adaptive Activity or Intelligence" and "Types of Learning Activity." The copious lists of references will be found most useful by anyone desiring to pursue the study further.

To the last book on our list,[1] also theoretical, though in the best sense of that abused term, we desire at once to extend a most cordial welcome. We welcome the book, in the first place, because it is not simply psychology "applied to education," which is usually poor stuff, but rather psychology written from the educational point of view, which may be, and in this case undoubtedly is, most excellent stuff. We welcome the book, in the second place, because it is a consistent protest against that logical bias which has so often ruined the treatment of the thinking processes in psychology, and therefore also in pedagogy. Against the notions that imagination and thought are separate faculties, that in judging we consciously compare two concepts, and that we go about thinking in syllogisms, Dr. Miller wages vigorous warfare. His account of the image and the concept as elements of the technique of thinking, his luminous exposition of the interplay of induction and deduction in the actual mental life, and his treatment of judgment and reasoning, are all, in our opinion, most suggestive. His view of the whole subject may be variously described as biological, functional, dynamic, teleological. We begin to think, when our accustomed modes of reaction do not work, and leave us temporarily "stumped"; when we are confronted with a situation which involves a problem, whether that problem belongs to the school or to the larger life beyond the school. How all this throws light upon the teacher's work we must leave our readers to discover from the book itself. Those who know the work of Dr. Dewey will be glad to learn that the author is much indebted to him.

Dr. Miller does not write for absolute beginners, but presupposes some elementary acquaintance with psychology and logic. Still, the book is not harder to read than is inevitable, because it is clearly arranged, because the illustrations are apt and well worked out, and because Dr. Miller is not afraid—perhaps not sufficiently afraid—to repeat himself. The title of the book hardly does justice to its contents, for its real subject seems to be the functional view of psychology, with special reference to the processes of thinking and the problems of education. We think highly of Dr. Miller's work, and we confidently commend it to the attention of all who are interested in laying secure foundations for a theory of education.

[1] "Method in Reading and Composition." 84 pp. (Pitman.) 1*s.* 6*d.*
[2] "Genetic Psychology." By E. A. Kirkpatrick. 373 pp. (New York: The Macmillan Co.) 5*s.* net.

[1] "The Psychology of Thinking." By Dr. Irving E. Miller. 303 pp. (New York: The Macmillan Co.) 5*s.* net.

POST-AUGUSTAN POETRY.

THE second-rate is not an entrancing theme; and there is no question that most of the authors treated here are second-rate; often their chief interest lies in something other than their authorship. Yet there is an attraction about this period of Roman history, or we should not find so many scholars studying it. The authors are amazingly clever. Think of Lucan, that precocious boy; examine his work, and see what skill there is in the rhetoric! He probably knew his audience, and his work throws as much light on them as on him. He was not for all time, but for his time, like most politicians. Indeed, the parallel is not forced. Lucan would have made a successful party politician, addressing himself to those who have prejudice for reason and no sense of proportion. Seneca, again, in his dramas must have touched something that is in human nature, although it is only there sometimes. His ranting characters went down in Imperial Rome, and they went down elsewhere in the Middle Ages, even in the age just before Shakespeare. Rhetoric is also that which gave a vogue to Silius Italicus and Statius and Valerius. Yet all these—except, perhaps, Seneca—had real poetic merit, which might have made them remembered for something good in a happier age.

The truth is that all these are overmastered by their age, and for the same reason: they were writers, not poets. They suffer, as nearly all authors now suffer, from artificial conditions, which have separated the writers as a class from other men. No great art is ever born in this way. The great artists were men first, and writers by accident. Shakespeare acted, Milton was a statesman, North trailed a pike for his country before he took up the pen: so with Aeschylus, Sophocles, and most of the Greeks. Students too often do not live: they have their uses; but the writer who draws his inspiration from books is bound to fail.

The only exception to the decadence of these writers was satire. Here we have a branch of letters inspired by life, and described by men who had seen and felt. Thus it is that when Seneca deserts his rodomontade for satire, he scores a brilliant success; Mr. Butler is rather patronising to the "Apocolocyntosis," but it is the best of Seneca's literary work, and the burlesques of contemporary verse are particularly happy. It would seem as if Seneca had caught a glimpse of himself, and it amused him. Persius and Juvenal we all know; even Martial is real—a real human being is disclosed in his works, and he describes real life.

Mr. Butler has given a complete and painstaking analysis of the works that he reviews, and illustrates his remarks by many quotations (which are translated). The book is thus suitable both for the student and for the general reader. He says the proper things not at all badly. He is hardly an acute critic, however: there is little that is original in the book. But it is agreeable to read, in spite of a touch of the florid now and again. The ordinary student knows little or nothing of most of the authors here described, and we can recommend the book as a useful introduction to their study. We hope it will not be used by such instead of a study of the originals, but we have our fears.

[1] "Post-Augustan Poetry from Seneca to Juvenal." By H. E. Butler. (Clarendon Press.) 8s. 6d. net.

RECENT EXPLORATION AND THE MAKING OF MAPS.[1]

By Colonel Sir Duncan Johnston, K.C.M.G., C.B., R.E.

Recent Exploration.

I doubt if there has ever been a year in which more important additions to geographical knowledge have been made than those resulting from the journeys of Dr. Sven Hedin, Dr. Stein, and Lieut. Shackleton. Dr. Sven Hedin's previous explorations had deservedly gained him such a high reputation as an explorer that it seemed almost impossible for him to increase it, yet his recent expedition in Tibet, extending over two years, has enhanced his already great reputation. Refused permission to enter Tibet from India, he was not to be deterred. Travelling round to Leh and making that place his starting-point, he entered Tibet and traversed in various directions a considerable tract, previously unexplored, of that country, making a good reconnaissance survey of the country he passed through. A large part of his journey was through a bleak and inhospitable region, where he encountered intense cold and very great privations. At one time he went for eighty-three days without meeting a living soul, and the cold and hardships were such that out of ninety-seven ponies and mules with which he started only six came through. Yet in the following year, in the depth of winter, Dr. Sven Hedin again traversed this terrible country. In doing so he ran imminent risk of starvation, as his last sheep was killed a considerable time before he got through to country where he could obtain fresh supplies.

Dr. Sven Hedin's tact and resource were as great as his fortitude and courage. He made friends wherever he went, and, although the Tibetan Government sent orders over and over again that he should be turned back, he succeeded in spending two years in exploring the country, maintaining the most friendly relations with the Government officials and others whom he met. Besides exploring and surveying a large tract of previously unexplored country, he investigated the sources of the Brahmaputra, the Indus, and the Sutlej, and in the course of his journeys he accumulated a mass of geographical and other scientific information.

Next comes Dr. Stein's expedition to Chinese Turkestan, by which he has made a most noteworthy contribution to geographical knowledge and antiquarian research. Dr. Stein, accompanied by that capable surveyor Rai Ram Singh, who was later relieved by that equally skilful and energetic surveyor Rai Sahib Lal Singh, travelled from India *via* Chitral and Kashgar. He commenced survey work in the eastern part of the Mustagh-ata range, and carried it along the Kun Lun Mountains, skirting the

[1] From the presidential address to the Geographical Section of the British Association at the Winnipeg meeting, August, 1909.

southern side of the Takla Makan Desert and the Lob Nor Desert to Suchou and Kan-chou. He surveyed a large area of the mountainous region lying westward of Kan-chou, then crossing the desert from Anshi to Hami he returned north of the Tarim River, skirting the southern slopes of the Tian Shan range, to Kashgar. During this very long journey Dr. Stein came across the ancient frontier wall, built about the second century B.C. He traced it west of Suchou, until lost in the desert, for some 250 miles, and he made various incursions into and across the desert, making discoveries of the greatest antiquarian interest.

After his return to Kashgar he surveyed the last unexplored portion of the Kun Lun Mountains and the country containing the sources of the Khotan or Yurungkash River, which proved to be flanked on the south by a magnificent range of snowy peaks rising to more than 23,000 feet; thence passing the sources of the Keriya River he skirted the southern slopes of this snowy range and finished by connecting this survey with that to the north of this range. The privations and hardships undergone by Dr. Stein and his party were very great, and, just as he completed his last bit of survey, he was unfortunate enough to get his foot badly frost-bitten, and had to hasten to more civilised parts for medical treatment.

The last completed exploration I propose to mention is Lieut. Shackleton's great journey in the Antarctic Circle, which has raised him to a high position among the gallant explorers of the Polar regions. Lieut. Shackleton personally arranged and supervised all arrangements for the expedition, his experience in the British Antarctic expedition under Capt. Scott standing him in good stead. Having landed in McMurdo Sound, a party consisting of Lieut. Adams, Prof. David, and others ascended Mount Erebus, which is more than 13,000 feet high, all above snow-level. Later Lieut. Shackleton and a sledge-party set off southward, and after an arduous journey succeeded in reaching 88° 33′ south latitude, more than six degrees nearer the Pole than any previous explorer. His party travelled altogether about 1,700 miles, including relays, in 126 days, a splendid performance in a rough and difficult country under very trying climatic conditions. Soon after passing 83° 33′ south latitude they lost their last pony, and from this point they had to drag their sledges themselves, although their journey involved the ascent of a plateau 10,000 feet high. They only turned back when their diminishing stock of provisions rendered it imperatively necessary to do so. They were for a considerable time on short rations, and found several times that they had expended their food supplies before reaching their next depôt. Had they missed one of these depôts—no unlikely contingency in such a country—they must have perished by starvation. Altogether the sledge journey was a great feat of pluck and endurance.

Lastly, Lieut. Shackleton's colleague, Prof. David, with others, made a sledge journey to the north-west, reaching the South Magnetic Pole. A good deal of triangulation was carried out, many geological specimens were collected, and much scientific information was obtained. Whether we consider Lieut. Shackleton's skill and energy in organising the expedition, the courage and determination displayed in carrying it out, or the results obtained, his expedition will stand out as one of the greatest of the many great efforts to reach the Poles, and as a British expedition it is one that specially appeals to us.

At first sight it would seem that these great journeys belie the opinion so often expressed of late years that the days of the explorer are numbered, and that in future geographers will have to deal with surveys rather than exploration; but, in fact, these splendid achievements only strengthen this opinion. These explorers have considerably reduced the comparatively small area still unexplored, and other expeditions are helping to diminish the unexplored area.

The Making of Maps.

Maps may be roughly divided into three classes:

(1) Geographical maps—*i.e.*, those on very small scales.

(2) Topographical maps. The dividing line between these and geographical maps is not very clearly defined. For the purpose of this address maps between the scales of 4 miles to the inch and $\frac{1}{25,000}$ scale will be considered as topographical.

(3) Cadastral maps—*i.e.*, maps on large scales mainly for property purposes.

As I have on a previous occasion read a paper to this association on "Cadastral Surveying," I propose to limit my remarks to topographical surveys and maps.

Triangulation.

The first preliminary to any survey should be a triangulation. It is the most satisfactory course, and the best economy in the long run, to carry out with the greatest accuracy possible the primary triangulation on which the survey is to be based. Such a triangulation will remain good for a very long period. For example, the primary triangulation of the Ordnance Survey was commenced in 1791; while some doubts have been expressed whether it is accurate enough to combine with other more recent work for the purpose of investigating the figure of the earth, no one has questioned that even the earliest part of this triangulation is amply accurate enough for map-making purposes.

On the other hand, I do not advocate carrying out a primary triangulation until arrangements have been made for basing a survey on it. An accurate triangulation is now a much quicker and less expensive operation than it used to be. The introduction of Invar tapes and wires has largely expedited and simplified the accurate measurement of base lines, while the improvements effected in theodolites enable equal or greater accuracy to be obtained with the comparatively small and handy instruments now made than could be got formerly with large and cumbrous instruments, such as the 36-inch theodolites, with which most of the primary triangulation of Great Britain and Ireland was carried out. Unless observations are rendered difficult by numerous buildings, by trees, or by a hazy or smoky atmosphere, a good primary triangulation should not now be very expensive. It is usual to base on the primary triangulation a minor triangulation of several orders, the object being to have an accurate framework of trigonometrical points on which to base the survey. If it is important to keep the expense low, the trigonometrical points may be rather far apart, intermediate points being fixed by plane table; but it should be remembered that it is the truest economy to make the best triangulation which funds admit of. In forests or in wooded and rather flat country, where triangulation would be very expensive, lines of traverse made with every possible accuracy, and starting and closing on trigonometrical points, may be used instead of minor triangulation.

Detail Survey.

Provided the detail survey is based on triangulation, it may be made by any recognised method. Plane tabling is now almost universally resorted to, and is probably as

cheap and convenient as any other method. The vertical heights of the trigonometrical points will have been fixed by vertical angles with reference to some datum. The height of intermediate points can be fixed by clinometer lines, especially down spurs and valleys, and even by aneroid, and from these heights the contour lines can be sketched in. Altitudes can be more accurately fixed by spirit-levelling; but this is an expensive method not likely to be much used in the case of topographical surveys. It is possible that in exceptional cases photographic surveying may be resorted to with advantage, and undoubtedly photographic methods sometimes enable work to be done which would not otherwise be feasible.

Scale of Map.

The next point for consideration is the scale on which the map is to be published, and it is an important one. Speaking generally, the cost increases with the scale, and cost is therefore one of the main determining considerations. The physical and artificial character of the country, the amount of detail it may be decided to show on the map, the method adopted for representing hills and other detail, and the method of reproduction to be used, all affect the question.

Clearness and legibility are among the first essentials of a good map, and it is desirable that the scale should be such that all detail it may be decided to show on the map can be inserted without overcrowding, or conversely, if the scale is fixed, the amount of detail and method of showing it should be such as to avoid the common fault of overcrowding the map.

In populous countries, such as Belgium, France, and Germany, where buildings, roads, railways, &c., are numerous, a larger scale is, *ceteris paribus*, desirable, than in less populous countries. All important detail, such as roads, railways, canals, forests, woods, &c., should appear on the map, as should the more important names; but it is a matter for consideration how far minor detail, such as orchards, marshes, rough pasture, state of cultivation, &c., should be inserted on the map, and to what extent the less important names should be omitted. In hilly country hachures and contours, especially if in black, tend to obscure the detail and names, and the smaller the scale the greater this tendency.

Methods of reproduction will be dealt with later, but I may here say that more detail and names can be shown clearly on a given scale if the map is engraved on copper than if reproduced in any other way. The scales adopted by different countries vary very much.

The introduction of cycles, motors, and other rapid means of locomotion has led to a demand for a scale which will show a considerable tract of country on a sheet of moderate size. If the standard map is already on rather a large scale, this demand is best met by publishing a reduction of the standard map. This course is followed by Great Britain and Ireland and by Canada, the 1-inch map of which is reduced to and published on the ½-inch scale; but if only one scale is used a compromise must be arrived at which will meet the reasonable requirements of rapid locomotion, as well as the other essentials of a topographical map.

Scale of Field Survey.

It is usual to make the field survey for small scale maps on a larger scale than that on which the map is to be published with the view of securing greater accuracy of detail, but this should not be overdone. If the field survey is on too large a scale it entails needless expense; also when the surveyor is working on too large a scale he is apt not to realise the effect of reduction on his survey, and is likely to survey so much detail as to overcrowd the map, thus increasing the cost of the work and injuring the map.

When the map is reproduced by photographic methods the fair drawing is usually on a larger scale than the finished map, so as to get finer results on reduction; but in this case also, for somewhat similar reasons to those stated above, there are limits to the amount of reduction which can be made with advantage.

I consider that the best results are obtained when the field survey is made on double the scale of the finished map; that if reproduction is to be by engraving, the fair drawing should be on the same scale as the finished map; that if, on the other hand, reproduction is to be by photographic methods, the fair drawing should be on the same scale as the survey—*i.e.*, double that of the finished map. The reduction I advocate should conduce to accuracy of detail and, if reproduced photographically, to fineness of detail, while it is not so great that the surveyor and draughtsman should be unable to realise the effect of reduction.

Detail.

The need of considering the amount of detail, &c., to be shown is not always sufficiently realised. The way in which detail is to be represented also needs consideration, as on small scale maps much detail has to be represented conventionally. Railways have to be shown conventionally, and should be so marked that they catch the eye without being too heavy. Roads also should be clearly marked. Where different classes of roads exist they should be distinctively shown, main roads being more prominent than others. It is important to know which roads are fit for fast wheeled traffic in all weathers, and which are fit only for slow traffic. The exact classification of roads must depend on the conditions obtaining in the country. The most elaborate classification is that shown on the French maps, and next that shown on the maps of Great Britain. Provided that important distinctions are represented, the simpler the classification the better.

Forests, woods, marshes, and in some cases pasture, rough pasture, orchards, vineyards, gardens, &c., are shown by conventional signs. While forests, woods, and marshes should certainly be distinguished on the maps, I incline to the opinion that the state of cultivation is better omitted, and that the less small detail shown the better. Such small detail increases the cost and often overcrowds the map. The German $\frac{1}{100000}$ scale shows much small detail, and although the maps are beautifully and delicately engraved on copper, the detail is rather crowded on some sheets. The French Carte Vicinale is, in my opinion, rather crowded with names.

The most difficult question, and that on which opinions differ most, is the method of representing ground forms. Methods which answer well on steep ground are less satisfactory on gentle slopes, and *vice versa*, and each method is open to some objection. Ground forms may be indicated by contours, hill shading in stipple, vertical hachures, horizontal hachures, the layer system, or by a combination of some of these.

Vertical hachures when well executed give an artistic and graphic representation of the hills. In the Swiss and British maps the pictorial effect is enhanced by assuming a light from the left-hand top corner. In steep ground, especially when the hachures are in black, these are apt to obscure detail and names. I think hachures are better when printed in colour, but many will disagree with me

on this point. Horizontal hachuring, while having some advantages, is less effective and is little used.

The system generally known as the layer system has been used in Great Britain by the well-known Scotch firm of J. Bartholomew and Co., has recently been adopted by the Ordnance Survey for its ½-inch maps, and is used in the ½-inch maps of Canada. It consists in indicating by various shades of colour the area lying between certain contours; thus one shade may be given to all ground below the 50-foot contour, another shade to ground between the 50- and 100-foot contour, and so on. This system gives a general indication of ground form and enables the contour lines to be followed more easily. Its shades of colour enable the eye to pick out more easily all land lying at about the same level. It is most effective in ground with a small range of vertical height, as the vertical depth of layers can then be small and the distinction in colour between successive layers marked. In hilly ground the depth of the layer must be increased, which means that many ground features are ignored on the map, or the number of layers on the map must be large, in which case the distinction in shade between successive layers will be less marked. This method is popular in Great Britain, and enables those who are not versed in reading contours and hachures to realise something of the nature of the ground forms.

Opinions differ so much on this subject, and there is so much to be said for and against each method, that I will confine myself to the opinion that contours reasonably close together should form the principal feature of any method of representing ground forms; that contours by themselves give a very fair representation of the ground; that vertical hachures, if printed so as not to obscure the detail and names, or stipple shading when there is not too much colour on the maps, increase the pictorial effect and are useful additions to contours; that ground forms should preferably be in colour, and that where hachures or stipple are used as well as contours both should be in the same colour.

VERTICAL INTERVAL OF CONTOURS.

The vertical interval between contours should depend partly on the scale, partly on the steepness of the ground. Practice varies considerably in this matter. On the British 1-inch map there are contours at 50 feet, at every 100 feet up to 1,000 feet, and thence at 250-foot intervals.

I consider that if the contours are printed in colour the vertical interval may with advantage be such that on steep ground the contours are reasonably close together, every fourth or fifth contour being printed heavier so as to be more easily followed. If the contours are in black they cannot with advantage be so close.

It is, in my opinion, best if the contour interval is uniform all over a country. Failing this, it seems desirable that it should be uniform over considerable areas, and at least throughout a sheet; but this view is not universally held. I do not like the varying interval adopted by the Ordnance Survey. The contours on the Ordnance Survey maps are surveyed with great accuracy and at great expense. For topographical maps much cheaper and more rapid methods will suffice.

To recapitulate my views, I advocate for a topographical map a scale between $\frac{1}{253440}$ and $\frac{1}{126720}$ (½ inch to a mile), according to circumstances. The scale of survey to be double that of the finished map; ground forms to be shown by contours reasonably close together, the exact interval depending on the scale of the map and the nature of the country, also, if funds are available, by vertical hachures; both contours and hachures, if shown, to be in colour, the same colour being used for both. If considerations of time and cost do not admit of reproduction by engraving on copper, the map to be reproduced by some photographic method and printed in not more than five colours. I put forward these opinions rather as a basis for consideration than as having special weight in themselves. With the increasing recognition of the importance of geography an increasing demand for maps is sure to come, and good maps can only be satisfactorily designed after considering the points here discussed.

I should like to have said a few words on the aid which good maps give to geographical education, but my address is already too long. I will only say that while good maps and geographical education are of use to all countries, they are of special value to the British Empire, the different parts of which are geographically so scattered, but which are so closely bound together by common ties of kinship, interest, sentiment, and loyalty.

HISTORY AND CURRENT EVENTS.

THE censorship of printed books which began almost as soon as the art of printing was inaugurated ceased here in England, not because of Milton's great plea for freedom in the "Areopagitica," but as a move in the party politics of William III.'s reign. The question, like so many others in history, was not settled on its own merits, nor because of reasoned argument, but because the Opposition of the day wanted freedom for their own pamphlets. The censorship of stage plays which was inaugurated in the eighteenth century for political purposes is now being discussed in the papers on its merits, and there seem to be as many opinions in its favour as against it. The arguments used are similar to those used in the old discussion on the censorship of printed books, the danger on one hand of appealing to a public of unbalanced mind, and on the other of interfering with the free contest of "truth and error."

THE Constitution of the Union of South Africa, evolved by the statesmen of the various colonies concerned, has received the ratification of the Imperial Parliament practically without amendments. Thus, alongside of a united Australia and of a united Canada, we shall have for the future a third union within the British Empire, and the history of federations has a new chapter. The event is therefore worthy of notice in itself, both for the student of institutions and for those who are interested in the British Empire. But we mention it here mainly because Mr. Balfour told the House of Commons, and his remark was received with cheering assent, that "the world has never shown anything like it in its whole history." We therefore despair of finding a parallel, and note the consummation so far of the tragic history of the last twelve years as unique.

How the world is shrinking! and how we are diminishing the wonder of things! Only four hundred years ago it was the endeavour of the most adventurous to reach the eastern coasts of Asia and discover the strange unknown land called Cipango. And now, not only are the problems solved which were known as the North-west and the North-east Passages, but, owing to the development of what has also become a prosaic reality, the use of steam and electricity in locomotion, we travel to Cipango—or, as we call it, Japan—in the most matter-of-fact way. This

summer, among the advertisements of the Great Eastern Railway announcing excursions to Clacton or Yarmouth, appeared an ordinary poster with these words prominently displayed: "Japan in 16 days." Is it, then, possible to go to Liverpool Street Station and ask, as a matter of course, for a ticket to, say, Yokohama, as one would ask for a ticket to Cromer? What would Columbus say? or the early Jesuit missionaries? or the founders of East India companies?

The story of the revolt of our American colonies and of their success in making good their independence of the mother country has long been a matter of tradition in which myth has played a part. Because the Whigs of 1832 traced the beginnings of their party to the opposition roused by George III.'s activities, their historians have led us to believe that all his opponents were right, all his friends were wrong. As this tendency has led us to take strange views of Wilkes, of Chatham, and of Warren Hastings, of which we have no time at present to speak, so we have accepted the easy view that all the colonies were in favour of independence, and only a small interested party in this country were opposed to them. The falseness of this statement of the story has for some years been known to serious students, and now we note signs that the truth of the matter is beginning to filter down to those who speak on public occasions. An ex-Governor of Massachusetts this summer, in a patriotic speech, laid emphasis on the fact that "the ocean was not the dividing line," and that "half, perhaps more than half," of the colonists were on the side of George III.

ITEMS OF INTEREST.

GENERAL.

A list of the public introductory lectures with which the new session at University College, London, will be opened can be obtained from the secretary of the college. From the twenty-two lectures we select the following as being likely to appeal specially to teachers at work in secondary schools. On October 6th, at 7 p.m., Prof. H. R. Kenwood, on "What Hygiene demands of School Teachers"; on October 7th, at 2 p.m., Prof. C. Read on the "Psychology of Character"; and at 6.30 p.m., Mr. D. Jones on the "Pronunciation of Modern French." On October 8th, at 6 p.m., Dr. C. Spearman will lecture on education based on experiment, its achievements and its promise; and on October 11th, at 5.30 p.m., Mr. D. Jones will deal with the pronunciation of English.

By arrangement with the London County Council, a course of ten lectures for teachers will be given in German on Saturday mornings, beginning on October 9th, at the Bedford College for Women, London, on "Goethe's Life and Work." The course is open free to all teachers in London secondary and elementary schools and to teachers in training. A course of lectures, accompanied by demonstrations and practical instruction, on "Instructions on the Principles of the Hygiene of Common Life," will be given by Mr. J. S. Edkins at the college during the coming session on Tuesday and Thursday evenings, beginning on October 7th. The course has been arranged with the concurrence of the Education Committee of the London County Council, and is adapted especially for those who intend to become teachers of the principles of hygiene, particularly in schools. The qualifications necessary for joining this class can be obtained from the principal of the college or from the L.C.C. Education Officer.

The School Nature Study Union begins its meetings this winter on October 15th, at 7.45 p.m., at the College of Preceptors, when Miss C. von Wyss will lecture on some recent experiments in the teaching of nature-study. An interesting series of monthly lectures has been arranged for the session, and full particulars can be prepared from the general secretary, Mr. H. E. Turner, 1, Grosvenor Park, Camberwell, London. Among the remaining lectures we notice the following: "Mahomet and the Mountain," by Mrs. A. L. Sandford; "The Atmosphere as an Open-air Nature Study," by Mr. G. G. Lewis; "British Grasses," by Mr. J. Groves; "Flowers and their Visitors," by Prof. J. R. Ainsworth Davis; "Wasps—a Subject for Nature Study," by Miss C. E. Isaacson.

The winter lectures and discussions of the Child Study Society, London, will commence on October 7th, when a reception of the members by the president, the Earl of Stamford, will be held at 90, Buckingham Palace Road, London. Short addresses on child study will be given by Miss Alice Ravenhill, Dr. C. W. Kimmins, and Dr. G. E. Shuttleworth. An interesting programme has been arranged for the Christmas term, and particulars can be obtained from the honorary secretary, Mr. W. J. Durrie Mulford, at the above address.

The autumn meeting of the English Association will be held at University College, London, on October 28th. Mr. Anthony Hope Hawkins will deliver a lecture on "Dialogue." Mr. A. H. D. Acland, the chairman of the executive committee, will preside. An informal reception will be held after the lecture. Those intending to join the association are reminded that the new year begins with October. All information can be obtained from the secretary, 8, Mornington Avenue Mansions, London, W.

The calendar of the Manchester Municipal School of Technology serves admirably to show the complete provision made at this institution for higher technical instruction in south-east Lancashire. The school provides instruction and training in the principles of science in their application to industry, and carefully planned courses of work, each extending over three years, are provided in all branches of technology for day students more than sixteen years of age. We notice that the school authorities lay great stress upon adequate preliminary training for the students. It is pointed out in a prefatory statement that the successful career of a student depends essentially upon his previous general education, for unless this has been thorough and liberal no satisfactory progress can be attained in any of the departments of the school. The power of clear linguistic expression and the mastery of the elements of mathematics, physics, and descriptive geometry are mentioned as vital to a successful study of the applied sciences. The writer of the preface goes on to point out that mere interest in experiment, or in machinery in motion, or even evidence of manual skill and dexterity, without a firm grasp of the above-named fundamental subjects, is of small avail if the purpose of the student be to attack serious problems in applied science and to fit himself for a position of industrial responsibility.

The eighty-seventh session of the Birkbeck College, London, commenced on September 27th. The opening address was given in the theatre by Dr. H. A. Miers, F.R.S., principal of the University of London. The class-rooms were afterwards open for inspection. The college is in relation with the University of London; the classes are held both in the day and evening; twenty-eight members of the staff are recognised teachers of the University. The courses of study provide for degrees in the

faculties of arts, science, laws, and economics. The laboratories are well equipped with modern apparatus and appliances, and research work is encouraged in various science departments.

THE class lists show that the total number of candidates entered for the Cambridge Local examinations held in July was 7,723, exclusive of 303 candidates examined at colonial centres. In the senior examination 965 boys and 1,307 girls passed, 87 boys and 23 girls being placed in the first class. Sufficient merit was shown by 487 boys and 313 girls to entitle them to exemption from one or both parts of the Previous examination. Of the junior candidates, 1,451 boys and 1,184 girls passed, the numbers placed in the first class being 128 and 17 respectively. In the preliminary examination 263 boys and 256 girls satisfied the examiners.

THE Agent-General for Queensland has just received the report of the Secretary for Public Instruction for the year 1908, from which document the following information has been taken. The gross departmental expenditure for 1907 compared with that of 1908 (in brackets) was: primary education, £313,702 1s. (£317,723 15s. 7d.); scholarships and exhibitions, £6,182 8s. 4d. (£6,524 18s. 9d.); endowments to grammar schools, £7,500 (£7,747 13s. 2d.); technical education, £10,591 13s. 6d. (£12,759 9s. 9d.); schools of arts—grants in aid, £4,534 0s. 3d. (£4,289 2s. 5d.); totals, £342,600 3s. 1d. (£349,044 19s. 8d.). The cost of administration was 1·8 per cent. of the gross departmental expenditure. The cost of inspection was 2·2 per cent. of the expenditure on primary education. The whole charge for administration and inspection was 3·9 of the whole expenditure; for 1907 it was 3·5 per cent. The Technical Instruction Act of 1908 has already given an impetus to technical education in Queensland. Under the Act the State may contribute four-fifths of the cost of the erection and equipment of technical colleges, and, although the Act has not yet been proclaimed, effect has been given to the principle of the four-fifths contribution, and assistance on that basis has already been granted to several colleges. Many of the colleges are still carried on as adjuncts of the schools of arts.

THE Queensland Education Department is anxious to create in school pupils a taste for reading, and wishes to organise a system of home reading for such pupils with a properly directed choice of suitable books and magazines. Many schools have small libraries, but it was thought that it would be more advantageous in many respects if, instead of having a library in each school, there was one general library in each centre, so that the range of books and magazines might be wider, and there might be a continual flow of the best literature for boys and girls. It was considered, also, that the school library might be worked in conjunction with the local school of arts; that the sphere of the institution might be widened to include the schools in the district; that the schools might be brought into close relationship with the schools of arts and become feeders thereof; and that generally the value of schools of arts as educational institutions might by this means be increased. With those objects in view, a scheme has been introduced to provide for school libraries.

IN 1907 the council of the Association of Secondary School Teachers of Victoria appointed a committee to draw up a scheme for the co-ordination of work in the sub-primary and primary grades of the secondary schools of the colony. Their report has now been published by Mr. J. C. Stephens, 146, Elizabeth Street, Melbourne. The sub-primary grade, it may be said, includes pupils up to the age of eight years; the lower primary grade, pupils from eight to eleven years of age; and the higher primary, pupils from eleven to fourteen years. The committee recommends an outline of work in each of the grades mentioned, and suggests suitable divisions of the available school hours among the various selected subjects. Detailed schemes of work in each subject chosen for inclusion in the curriculum for different grades are laid down, and it is satisfactory to find that many of the most recent of the changes at home have been recommended in Victoria. It is recommended that a foreign language should not be begun at all in the sub-primary stage, and that Greek should not be begun in the primary stages. During the sub-primary and the primary stages there should be no systematic work in any one branch of science, but preliminary work should be done in order to lay the foundations of scientific training. Up to the age of eight years the maximum time of a lesson, according to the committee, should be twenty-five minutes; between eight and eleven years the maximum time should be thirty minutes; between eleven and fourteen years the maximum time should be forty-five minutes. In addition to the longer recesses, frequent intervals of five minutes between lesson-periods are very desirable. These latter are to be deducted from the lesson-periods. Subjects requiring a greater mental strain should be taken earlier in the day. Up to the age of eight years there should be no home-work; between eight and eleven years there should be a maximum time of one hour; between eleven and thirteen years a maximum time of one and a half hours; between thirteen and fourteen years a maximum time of two hours.

THE teachers in the high schools of the Grand Duchy of Baden, where the co-education of boys and girls has been the general practice since 1901, have been giving the results of their eight years' experience, and these have been published in the German Press. Most of the teachers maintain that co-education is to be recommended only in small centres of population where a separate girls' high school could not exist; in all other districts it is considered preferable to provide separate girls' schools with their own teaching programme. Most of the teachers deny that there is any useful sense of competition between the sexes, adding that, on the contrary, the standard of classes containing many girls tends to fall. Many teachers complain that girls show markedly less talent for mathematics and natural science, and that in teaching biology and other subjects it is necessary to restrict the subject in order to make it suitable for girls. The teachers agree that the boys dislike the presence of the girls. The girls have no effect upon the conduct of the boys, but the influence of the boys on the girls has been shown in displays of morbid ambition and rough conduct.

THE September number of *Travel and Exploration* will be of special interest to the many lovers of Omar Khayyám on account of the article, by Major P. M. Sykes, describing his pilgrimage to the tomb of the "old tent-maker." The description of the journey from Meshed across the bush-covered hills that divide the Sacred City from the plain of Nishapur is in itself interesting, while the actual visit to Omar's burial-place will rouse a reverent enthusiasm in the minds of all his devotees. Major Sykes by his knowledge of Persian life and history clears away many apparent obscurities among the famous quatrains, and certainly it will be an interesting revelation to many to find polo given as the explanation to the verse beginning: "The Ball no question makes of Ayes and Noes."

The current issue of *The Country Home* includes a description of the Croft School, an institution for girls and little boys at Aldershot, where manual work and home training are the chief factors of the curriculum. Carpentry, basket-making, and book-binding occupy the restless hands of the children, dancing and games ensure healthy bodies for them, while nature-study, hygiene, and physiology keep brains active. The excellent illustrations are a good advertisement for this scheme of education; the camera has depicted groups of happy children dressed in sensible, hygienic costumes, with hands and brains occupied over manual work—and last, but not least, enjoying the fresh, open air.

The *British Medical Journal* announces that the third International Congress of School Hygiene, which was to have been held in Paris during Easter week of next year, has been postponed until the first week of August.

SCOTTISH.

A circular has just been issued by the Education Department reminding school managers and teachers that next year separate papers in history and geography will be set for candidates presented in the lower grade of English. As regards history, important changes are contemplated in the general principles on which the papers will be framed. The staple of instruction is to be Scottish history. Up to the time of the Reformation only a general knowledge of the principal events will be looked for, but from then onwards a somewhat more accurate and detailed acquaintance with events and personalities will be expected. In so far as English history is studied, "it should have regard mainly to those aspects which are closely connected with the history of Scotland, such as the Hundred Years' War, or present an instructive contrast thereto, like the growth of Parliament." Such questions on European history as are set will be limited to a few outstanding personalities and picturesque incidents. Specimen papers have been prepared in both history and geography. Without exception, these are framed on sound educational principles, and likely to give satisfaction both to teachers and pupils.

It is very unfortunate that at the inauguration of the new system of the medical inspection of school children the Glasgow School Board should find itself at issue with the general body of medical practitioners in the city. The School Board has decided to appoint a number of part-time medical officers to assist the chief medical officer in the work of examination and supervision. These are required to devote to the work $7\frac{1}{2}$ hours a week for a session of twenty weeks. The salary offered is £40 per session, or about 5*s*. 4*d*. per hour. At a meeting of the Medical Association of the city this part of the scheme came in for severe criticism, more especially as the neighbouring School Board of the Govan Parish is offering 12*s*. 6*d*. to its part-time officers. A deputation of medical men met with the School Board, but were unable to obtain any modification of the terms. The medical men have appealed to the British Medical Association, which has placed the Glasgow appointments on its "black list." There the matter remains at present; but whatever the outcome, it is certain to prejudice the smooth working of a scheme upon which so many high expectations are based.

During the progress of the Education (Scotland) Bill it was indicated that the constitution of the secondary education committees would come up for reconsideration and reconstruction. Hitherto the predominant element in these committees has not been educational, as the representatives of school managers were outnumbered by the town and county council representatives. A new minute has been issued reconstituting the committees and giving a largely increased representation to school managers. This seems a wise and necessary change, for it will place the administration of education in the hands of those best qualified for the work. Provision is also made for co-opting members, not exceeding three in number, "on account of their interest in, or special knowledge of, educational questions." Under this clause it is possible to utilise the expert knowledge of teachers in the administration of education, and it is hoped that secondary education committees will take full advantage of the power thus conferred upon them.

As was generally expected, the Secretary for Scotland has refused to give effect to the petition presented by a majority of the Scottish Members of Parliament for the transfer of the Education Department from London to Edinburgh. Lord Pentland based his decision on the ground that during the progress of the Education Bill through the Scottish Grand Committee a similar proposal was negatived by a majority of two to one. Apart from that consideration, he held that the present arrangement best met the convenience of all interested in education, and was supported by the general body of public opinion. From the theoretical and sentimental point of view much can be said for the proposed transference, but on practical grounds there can be little doubt that the Secretary for Scotland has decided aright.

The School Board of Glasgow has issued a circular to employers of labour inviting their co-operation in extending the practical value of continuation classes. With this object in view, the Board has issued a schedule to ascertain the number of young people employed between the ages of fourteen and eighteen, to what extent the existing classes are suitable for them, and whether there are any other classes that could profitably be established. The circular further asks: "Do you consider that classes must necessarily be held in the evenings?" This at once raises a vital issue. It is hopeless to expect much benefit from continuation-school education if it is all obtained at the close of a prolonged day's work. The Board has been well advised to place the onus of settling this question, in the first place, upon the employers of labour, and it will be instructive to have their response. If even a considerable minority are prepared to grant special facilities for day attendance it will be comparatively easy to bring pressure to bear upon the remainder. In any case, it is certain that a really effective system of continuation schools can only be based on the foundation of a strong public opinion.

The issue of the calendar for the sixty-eighth session of the Glasgow School of Art directs attention to the remarkable advance that has been made in the development of the school within recent years. It is now housed in one of the best equipped buildings in the country, and the most ample facilities have been provided for instruction in all branches of art. For the first time the subjects of art history, the history of culture and their complementary treatment in figure composition, find a place in the curriculum, while composition and technics have separate studios and special lecturers allotted to them.

IRISH.

THE Pass Lists containing the results of the examinations of the Intermediate Education Board were published early in September. The general summary is as follows:

Boys.

	Senior Grade	Middle Grade	Junior Grade	Preparatory Grade	Total
Number examined	436	1527	3226	2487	7676
Number who passed:					
With honours	142	334	555	—	1031
Without honours ...	156	466	1156	1437	3214
Total	298	800	1711	1437	4245
Proportion per cent. of those examined who passed	68·3	52·4	53·0	57·8	55·3

Girls.

Number examined	244	752	1609	1051	3656
Number who passed:					
With honours	73	85	211	—	369
Without honours... ...	97	290	635	611	1633
Total...	170	375	846	611	2002
Proportion per cent. of those examined who passed	69·7	49·9	52 6	58 1	54·8

As compared with last year, the percentage of passes is considerably lower. There is this year almost the same number of students examined, but last year 6,963 students passed (counting both boys and girls) as compared with 6,247 this year, the percentage last year being 59·9 for boys and 63·7 for girls. In every grade, both for boys and girls, the percentage of passes is lower this year, except in the boys' preparatory grade, where there is an increase of 0·2. Most remarkable is the drop in the middle grade—11·2 per cent. for boys and 18·7 for girls. The variations in the standard of passing are a hardship on the pupils and the schools. To the schools this may be compensated partly by raising the scale of payments per pupil passing, and this must take place if the same amount of money is to be disbursed in school grants. With regard to the pupils, the question may again be asked fairly, and with increased force this year, whether an examination in which the percentages of passes are so low can be said justly to be what it professes—viz., a test for the "student of average capacity, fairly well taught."

THE inspection of intermediate schools has at last begun. Heads of schools have been asked to sign a form allowing their schools to be inspected, and almost before they have reopened after the summer holidays the inspectors have been sent out in twos to pay surprise visits. It is understood that these visits are merely of a general character for the purpose of collecting information and not—at all events this year—for determining in any degree the amount of school grants.

IN issuing his report—the last—on the Queen's College, Belfast, for the year ending July, 1909, the president, Dr. Hamilton, bids it an affectionate good-bye and welcomes in its place the new Queen's University. He compares its financial position and prospects with those of its predecessor. The Queen's College received from the Treasury only £7,000 per annum. The University will receive £28,000, and has, in addition, considerable private endowments. It will therefore be able to set aside more money for university scholarships and prizes, and intends to devote an additional £1,000 to this purpose. It will also receive a lump sum of £60,000 for additional buildings and equipment. The college library and museums will be improved, a new playing field is being acquired, and better provision is being made for women students, whose numbers show a considerable increase. One note of dissension has been raised, viz., in reference to the appointment of a professor of scholastic philosophy, but this will probably soon be forgotten.

DR. WINDLE, the president of Queen's College, Cork—now University College, Cork, a constituent college of the new National University—also dwells upon the prospects of his reconstituted college. He notes with great satisfaction that the number of students is greater than has been the case for twenty-five years. All the departments of college work, with one exception, have been up to or over their usual number of students. The exception is a remarkable one. It is that of Irish, "the history of which [he adds] during the past four years since it was attempted to revive the teaching of that subject has been most disappointing." During the last two years there have been no students at all in that department, and the facts go to "prove conclusively that there is but little enthusiasm for the study of the language in this district."

THE Department has issued a circular to the secretaries of technical committees with reference to the entrance examinations for technical schools and science and art schools and classes. The Department has been in the habit of itself setting papers for this examination, but owing to the small number of schools availing themselves of them, it proposes to discontinue the practice, and suggests instead the kind of test examination which each school might provide for itself. The subjects should be English, arithmetic and algebra or geometry or drawing, all to take place on the same evening, and it adds specimen examination papers of a kind which it deems would be suitable.

WELSH.

THE managers of the schools in Group VI. of Pembrokeshire have resigned in a body as a protest against the action of the county authority in appointing a mistress instead of a master for the Lambston School. The school is a mixed one, and the protesters say it requires a master "to preserve its efficiency." They therefore refuse to recognise the lady who has been appointed. The answer given by the chairman of the county authority is that the numbers are very small, and therefore the efficiency of the school could be maintained by a mistress. *The cost would be less*, and the authority must economise. Yet the chairman himself urges that the lady appointed is "a very efficient mistress, a B.A. of Wales, with excellent credentials, and of whose efficiency we have had proof." Surely it ought to be realised that with such high qualifications it is impossible to justify the county authority, not for appointing her, but for urging the lowness of the salary as being adequate for her. The defence of the chairman proves too much.

THE Merthyr Education Committee is preparing a plan to submit to the Board of Education for the conversion of Cyfarthfa Castle into a secondary school and pupil-teacher centre. The Board of Education has agreed that if the local authority take every possible step for an early opening it will recognise the new school for 1910.

H H

A new laboratory and art block have been added to the Canton (Cardiff) Municipal Secondary School. Accommodation in these schools is provided for 250 boys and 250 girls, and the building has cost £24,500, exclusive of the site. The new block cost £4,300. The school is declared equal to the best secondary schools in England. The total cost of the building is put at £49 per head, or, with the value of the site, £60 per head. The education rate in Cardiff is 1s. 6¼d., whilst the highest education rate in the kingdom is 3s. 3d., in the pound.

The Regulations (1909) for Secondary Schools in Wales of the Board of Education require that the "curriculum must provide instruction in the English language and literature, at least one language other than English, geography, history, mathematics, science, and drawing. A curriculum including two languages other than English, but making no provision for instruction in Latin, will only be approved where the Board are satisfied that the omission of Latin is for the educational advantage of the school. The instruction in science must include practical work by the pupils. The curriculum must make such provision as the Board, having regard to the circumstances of the school, can accept as adequate for organised games, physical exercises, manual instruction, and singing." In girls' schools there must be provision for practical teaching in needlework, cookery, laundry-work, housekeeping, and household hygiene, and "an approved course in a combination of these subjects may be substituted partially or wholly for science and mathematics for girls over fifteen years of age."

Great interest has been felt as to the allocation of the new Treasury grants to the University and University Colleges of Wales. It had been announced that £15,000 additional grant from the Treasury would be made, but it is now stated that the committee recommends the grant to be divided as follows: £1,500 a year to go to the University of Wales for the purpose of awarding fellowships for original research; of the remaining £13,500, £4,000 in each case is to be given to the University College of Wales, Aberystwyth, and to the University College of North Wales, Bangor; while the University College of South Wales and Monmouthshire is recommended to receive £5,500. It is, however, to be noted that £1,500 of this latter sum is allocated to the new medical school in connection with Cardiff University College. It is further stated that, of the remaining £4,000, £2,000 is recommended to be applied to the increase of the salaries of the principal, professors, and heads of departments; £1,000 to library and scientific equipment; £500 to further tutorial assistance; and £500 to a pension fund.

The Monmouthshire Education Committee has recently received an excellent report on the condition of the school gardens in connection with six schools. The committee states that it was "much impressed with their excellent condition, the magnificent crops, and the far-reaching value of the instruction. It is recommended that the scheme of school gardens be extended over the whole county, and that a larger number of boys have the advantage of this instruction."

Since January, 1908, seventeen new schools have been erected in the eastern division of the county of Glamorgan, fourteen large extensions made to schools, and seven temporary schools erected. This has been done at a cost of something like £100,000. Ten new schools were opened last year, and five this year. At the present time there are fifteen new schools in course of erection. The cost of the schools now in course of erection is estimated to be about £66,000.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Spanish Idioms, with their English Equivalents. By R. D. Monteverde. 102 pp. (Whittaker.) 2s. 6d. net.—A compendium of useful Spanish phrases. The first requisite of such a book should be strict order; but a promiscuous grouping of more than 200 expressions under the initial letter A is inconvenient. When we find the same expressions occurring again and again under the same heading we conclude that the arrangement of the book is not what it should be (*á medida del deseo* occurs at least three times in the same division). The English rendering of the idiom is often so broad as to lose its characteristic neatness, and a closer approximation to the original could, with advantage, have been found in many cases. We fail to see why the different meanings of an expression should not all be supplied at once. Why should the several meanings of *echar el guante, decir de repente, á mala verdad,* &c., not be supplied at the first appearance of the phrase? The "discerning public" referred to in the preface would, we think, have valued a more scientific indexing, and also a key to the peculiar system of accentuation used by the author.

Spanish Composition. By Alfred Remy. 98 pp. (Heath.) 1s. 6d.—Language teachers who attempt to supply their classes with something more than the "dry bones" of grammatical and phonetic peculiarities find it difficult enough to get hold of what they consider suitable text-books—extracts for reading, selected not merely for their literary beauty, but for the information they supply about the country, the institutions, and the people whose language is being studied. For composition work, however, the teacher has greater difficulty still in finding the book he wants. He has to fall back on retranslation or spend much time hunting up material and adapting it to his special requirements. Teachers and students of Spanish are fortunate in having at their disposal Mr. Remy's collection of essays on things Spanish. These essays supply ideal material for composition. The Spanish language, Spanish names, Carlist rebellions, Spanish painting, literature, architecture, diversity of character of the Spanish provinces, are a few of the topics. Helpful footnotes and an English-Spanish vocabulary complete the book, which gives evidence throughout of being the work of a thoroughly experienced teacher.

Gutiérrez's El Trovador. Edited by H. H. Vaughan. 108 pp. (Heath.) 1s. 6d.—It is somewhat surprising that the great wealth of the Spanish drama should have attracted so few English editors, especially as so much that is typical of the literature of Spain is to be found in dramatic form. We hope that this excellent little edition of a famous play will be appreciated as it deserves by English and American students, and that an increasing demand for such works will encourage editors and publishers to keep up the supply. Dr. Vaughan's edition of "El Trovador" is carefully annotated, and contains a good Spanish-English vocabulary. We are, however, looking forward to the time when all notes and meanings of words will be given, where possible, in the language of the text.

English.

A New Primer of English Literature. By T. G. Tucker and W. Murdoch. viii+215 pp. (Bell.) 2s. 6d.—A publishers' note informs us that the justification of the present English edition of this book lies in its success

in Australia and New Zealand. Those colonies have taught us many things, but we hardly think that the teaching of English literature is one of them. At any rate, the exposition of the present book strikes us as jejune; we hope that we are not unfair in suggesting that its general character of mediocrity is typified by a footnote to explain that the "Rape of the Lock" means "the cutting off of the curl of hair." Miss Kate Warren and Miss Elizabeth Lee, to mention no others, have given us more inspiring native work; and they have approached the subject consciously and definitely from the only possible end—that primers of English literature are tolerable only so far as they are used for reference by the pupil while he is reading the actual authors, to enable him to estimate literary standards and relationships. We should have thought that half-a-crown was a prohibitive price for such a book.

The Science of Speech. By B. Dumville. xii+207 pp. (Clive.) 2*s.* 6*d.*—The title of this book is misleading; the sub-title, "an elementary manual of English phonetics for teachers," more accurately describes the book. The way in which all previous books are disparaged and the author's own "Elements of French Pronunciation" (good as the book is) is praised makes rather an unfavourable impression. The book itself contains much useful information; but the sections dealing with the elements of English phonetics might well have been expanded at the expense of the chapter on the organic basis of English, which is of little value to those concerned with English only, and the unsympathetic and wholly unconvincing attack on Miss Dale's method. The chapter on spelling reform and standard English might also have been shortened with advantage. Good features of the book are the diagrams and the tabular arrangement of sounds; and some of the suggestions for simple experiments are valuable. The distribution of the matter is not always satisfactory, and there are curious omissions; thus there is no mention of syllabic *m*, *n*, *l*, the devocalising of final *v*, &c., the distinction of lax and tense in the chapter of vowels, and so on. Misprints are rare; we have noticed knabɔ for knɹ:bə (p. 93), *oncle* (p. 104), *lerk* (p. 132), *c* for *ɔ* (p. 147). The style is not agreeable, as the author has a trick of beginning sentences with *and*, *but*, and *now*, the repetition of which becomes wearisome, and occasionally lapses into expressions like "the first element gets the lion's share of the force, consigned to the limbo of oblivion, to pass into the realm of the unintelligible, to tide children over the slough of despond with less pain," which look singularly out of place in their matter-of-fact surroundings.

(i) *The Tragedy of Macbeth.* lxv+159 pp. (ii) *King Henry the Fifth.* lv+176 pp. Introduction and Notes by Dr. H. N. Hudson. Edited and revised by Dr. E. C. Black and Dr. A. J. George. School edition. (Ginn.) 2*s.* each.—To those teachers—a dwindling minority, we hope—who like a bulky apparatus in their class Shakespeares this new Hudson edition has much to commend it. To ourselves it is the illustrations that chiefly appeal—reproductions of the original title-pages of the third and fourth quartos and of the Swan and Globe Theatres. We observe that the notes are printed underneath the text to which they refer.

Barbour's Bruce. Edited by W. M. Mackenzie. xx+130 pp. (Black.) 1*s.* 6*d.*—The present selections, for use in schools, comprise very nearly four books out of the twenty into which the poem is divided. The selections have been made with great discrimination and care, and represent all in the work that is likely to prove of interest to young students. As the epic of the national struggle for independence and the fountain-head of the noble vernacular literature that culminated in Burns, the "Bruce" may fairly claim a place in Scottish schools. The editor, by means of an ample introduction and exhaustive glossary, has done his best to make the study of the work interesting and pleasant as well as instructive to secondary-school pupils.

History.

An Introductory History of England. By C. R. L. Fletcher. Vol. iii., 1660–1792, x+372 pp. Vol. iv., 1792–1815, viii+351 pp. (Murray.) 5*s.* each.—These two volumes complete Mr. Fletcher's history of England, for, as he says at the end of the second, he has no heart to follow the matter further, has no sympathy with the movements of the nineteenth century, and thinks "we need a distance and perspective before we can form anything approaching a fair judgment on the men and events of the past." In fact, we are somewhat surprised that he has gone so far, for, as we gather from various remarks that we could quote from both these volumes, he disapproves of party government, which he dates from the Restoration; of the pursuit of wealth rather than of national power, which also, in his view, began about the same time; of the preponderance in political influence of the town populations over those of the rural districts; and of Protestant Dissent in general, which he thinks would not have existed but for the persecution inaugurated by the "Clarendon Code." Indeed, we suspect that it is only the interest of our "second hundred years' war with France" that has induced Mr. Fletcher to continue his history. He tells us in his preface that the book has changed "not so much in plan as in execution; the book has unconsciously 'grown up.' It began as a book for boys, and has ended as one for young men." His excuse is that "certain persons for whom it was commenced eleven years ago have set it a bad example by growing up themselves"; but, in our opinion, the more modern periods of English history, with their play of political forces and lack of heroic endeavours (except, of course, in the area of war on a large scale), are unsuitable for quite young pupils unless as a series of dramatic incidents, and Mr. Fletcher's ideal is other than that. Besides the story of England and her wars, in which the international are constantly more fully treated than the constitutional events, there are chapters on Scotland *à propos* of the Forty-Five and on Ireland *à propos* of the Union, on India, and on social questions. There are altogether eight maps, three of which are in both volumes, and there are indexes. The moral of the volumes may be summed up in these sentences from the "conclusion": "National efficiency is likely to be best secured when a nation is governed by its fittest, strongest, and best-educated classes. National efficiency has suffered from the attempts made to base Government upon some fancied 'Natural Right' of every man to have a share in it. . . . Democracy is a most inexpedient form of government. . . . There are anomalies and symptoms of danger in our modern life, such as the depopulation of our villages, the stunted growth and heated precocity of our town-dwellers, the juggling of our political parties with all the serious interests of the State, at which we dare not laugh." Mr. Fletcher's various opinions may or may not be true, but when they colour the story and induce unequal treatment of the matters referred to, they do in so far detract from the value of a book for beginners.

Notes on British History. By W. Edwards. Part I., until 1485, viii+235+viii pp. Part II., 1485–1660, vii+192 (237–428)+7 (viii–xv) pp. (Rivingtons.) 2*s.* net each.—The title of this book is somewhat misleading. These are more than notes. They form a brief history told in such a way that the charge of "want of style" so often brought against writers of history fails for lack of relevancy. The book forms an excellent manual, and with a good teacher should fulfil its aim of preparing pupils for the various examinations mentioned in the preface.

Highroads of History. Book VIII. *Highroads of Empire History.* By E. M. Wilmot-Buxton. 255 pp. (Nelson.) 1*s.* 6*d.*—The story of the British Empire, told clearly and pleasantly with abundance of illustrations—full-page pictures and vignettes. On p. 15 is a useful diagram showing the various parts of the Empire drawn on a uniform scale of area. The book would be useful either for the library or for a text-book.

An English Church History for Children, 1066–1500. By M. E. Shipley. xi+351 pp. (Methuen.) 2*s.* 6*d.* net.—This is the second part of a history of which we have already noticed the first. It is written, of course, from the same point of view of sympathy with the Anglican Church, and with a tendency to speak well of all its leaders. The leaning is somewhat to the "Catholic" view, but against the Popes and all their "usurpations," whether ecclesiastical or lay. For those of Miss Shipley's way of thinking, and, indeed, for those who are not, this will prove an excellent introduction to the spirit of mediæval Church history.

A Brief Survey of the World's History. By H. G. Rogers. 93 pp. (Blackie.) 1*s.* net.—This is an attempt to set forth the main events of the world's history in periods of five hundred years each, from 2000 B.C. to the present day, with the object of bringing out the contemporaneousness of events in the various countries of Europe and Asia. It seems to us that the problem would be better solved by some of the charts which have been published for the purpose. The attempt to tell the story in such short compass seems to fall between two stools. The result is a book which is neither full enough to make a useful history nor short enough to emphasise the points the author wishes to make.

The Growth of Greater Britain. By F. B. Kirkman. iv+304 pp. (Blackie.) 1*s.* 9*d.*—This book was evidently written before the end of last century, and it has been brought up to date by additional chapters. It is a well-written account of the history of the British Empire, treating, after some chapters on the "period of preparation," the various parts of the Empire separately, each part ending with a brief statement of present-day conditions. There are appendices containing, respectively, the story of the last Boer war, a general summary, "notes and meanings," tables of dates, and two bibliographies, one of story-books, the other of authorities. The book contains also maps and pictorial illustrations, but no index.

Geography.

Philips' Geographical Pictures. Edited by P. H. L'Estrange. First series, 24 pictures on 20 sheets; sheets, 25 in. by 20 in., at 1*s.* 3*d.* each, or 21*s.* the set.—All teachers of geography are agreed as to the value of pictures—good, clear pictures, and of an *intelligible* size. The tiny and indistinct reproductions of photographs which are advertised as "illustrations" in many text-books—though perhaps better than nothing at all—tend often to irritate rather than instruct, and the questions one would like to build upon them are choked off at the outset. You cannot ask the child which way the river is flowing when you have a doubt yourself as to which is river and which is road in the picture! In this set, however, all is plain sailing. Philips' pictures are enlargements from actual photographs taken direct from nature. Most of them are worth framing simply as adornments for the class-room wall, quite apart from their intrinsic value as effective aids to class-room work. They are large enough to be seen by the whole form, and clear enough to elicit information of the right type, *i.e.*, by means of question and answer. Mr. L'Estrange, indeed, after describing each picture in a sentence or two at the foot, adds a few leading questions which may be taken as typical, though we think the experienced and *interested* teacher will rapidly evolve a simpler and therefore better set of questions in most cases. For the rest, the first thirteen sheets illustrate the work of nature on land-forms, the last seven the influence of climate on vegetation. The would-be purchaser may judge of the editor's selection of subjects from the following examples: Flamborough Head is chosen as an example of flat rocks worn by the sea; Brimham Rocks, near Ripon, stand for rocks worn by weather; Aysgarth Falls for rocks worn by river. Those who know the last-named Wensleydale *tour de force* will appreciate this selection, at any rate, and the photograph (one of Valentine's), though perhaps a little on the dark side, is worthy of the subject. Mount Tarawera (New Zealand) and Fingal's Cave are amongst the subjects of volcanic work. The Mer de Glace and several pictures taken by the photographers of the Scott Expedition to Antarctica supply ice-work, while such speaking titles as "A Desert Road, Tunis," "A Tea Estate, Ceylon," and "Sugar Culture, Jamaica," give definite clue to the way in which climate and vegetation are treated. Altogether the pictures are well worth getting.

Geography of the World. By H. E. Evans. xii+439 pp. (Blackie.) 3*s.* 6*d.*—This is a new geography on a very old style. It begins with definitions and ends with appendices. The rest of the book, save for some tolerably useful examination papers, consists of lists, more lists, and yet more lists. A good teacher, though he would hardly use the book for his class, might keep it as a reference for himself, but he would have to supplement it often. In what is termed a "detailed account" of Canada, which opens with the very baldest of historical notes, and then follows on with lists of boundaries, coast openings, capes, &c., he will light upon "*Mountains*—the Rocky Mountains; the Cascade Range with Mount St. Elias"—and that is all he will have for his detailed lesson on the mountains of Canada. That Mount St. Elias does not happen to be in Canada is, of course, a point of secondary interest, but it is hardly a good advertisement for the book. Again, the "surface" of Canada is, according to the author, "divided into four parts," viz., (1) the plateau of the west, (2) the tundras of the north, (3) the forest plains from Alaska to the great lakes, and (4) the treeless plains from Manitoba to the Rockies. That is all—nothing more. The St. Lawrence and the maritime provinces are for the nonce ostracised from the Dominion altogether. There is a fairly full index, which, at the same time, attempts to be a guide to pronunciation, and is not unsuccessful in that respect. All the same, much as one dislikes dogmatising on the pronunciation of geographical names, we think Mr. Evans has gone astray on some of his "words" (notably Alloa, Lofoden, Antigua, Sarawak), while others

for which one does require a guide (*e.g.*, Newara Eliya) he has left severely alone.

ANOTHER set of the "school property" pictures, issued by the *Education Department of New Zealand*, has reached us for review. These are sixteen photographs by the London Stereoscopic Co., designed to illustrate the geography of the British Isles, or rather, to be precise with this particular sixteen, the city of London. They may be recommended to the history quite as much as to the geography master, for the notes on the back of each have a historical rather than a geographical flavour. The Houses of Parliament, Westminster and London Bridges, the Tower and the Tower Bridge, Ludgate Hill, the Thames Embankment, and Trafalgar Square are examples of the subjects. The pictures are somewhat small (9 inches by 6 inches) for efficient work.

Africa and Australia. By J. B. Reynolds. 128 pp. (Black.) 2*s.*—This volume appears to complete Miss Reynolds's well-known series of "Regional Geographies." It is marked by the same able insistence upon cause and effect which we have learnt to expect in books from this experienced teacher of geography. The prominence given to natural regions leads the pupil unconsciously to think of a geography lesson as an opportunity of applying broad, simple principles of physiography to the special geographical conditions of the particular area under consideration. The trustworthy and well-chosen illustrations add greatly to the interest, while the simplified sketch-maps give that precision to the work which will enable the student to face an examination with equanimity. Surely, however, the legend to the left-hand map on p. 91 requires revision.

Cambridge County Geographies—(1) Norfolk, (2) Suffolk. By W. A. Dutt. Maps, diagrams, and illustrations. About 150 pp. each. (Cambridge University Press.) 1*s.* 6*d.* each.—These are two recent issues of a useful series containing much of information and much of interest. On the covers are printed two of Philips' coloured county maps, physical and geological; otherwise the maps are very few and far between. The diagrams deal with statistics of population, agriculture, fisheries, and live stock. The illustrations are chiefly from photographs, many of which have been taken specially for these books. The contents comprise a good deal of county history, as well as geography. Whether used as "readers" and text-books or not, the series should be in the school library.

Science and Technology.

Outlines of Physical Chemistry. By Dr. G. Senter. xvii+369 pp. (Methuen.) 3*s.* 6*d.*—This book, described by its author as an elementary introduction to the subject, adapted for students who have an elementary knowledge of physics and chemistry, is, in fact, suited rather to the student who has already taken a university course of general theoretical chemistry. The author limits himself in certain directions, preferring to devote the space at his disposal to the subjects which, in his opinion, present most difficulty to beginners. Thus he deals fully with the modern theory of solutions, the principles of chemical equilibrium, and electromotive force, but devotes relatively less space to the relationships between physical properties and chemical composition. This is probably, to a certain extent, the reason why the book, although giving a good account of the mathematical treatment of the subject, is somewhat lacking on the descriptive side. The pursuance of this purely theoretical treatment leads at times to the neglect of undoubted facts of first-rate importance. Thus, on p. 202, the usual statement is made that a catalytic agent accelerates, but does not initiate, a chemical change. In illustration of this the combination of hydrogen and oxygen is cited. These gases are said to combine rapidly when brought into contact with platinum; the platinum, however, hastens, but does not start, the combination. For "when the mixed gases are heated alone at 440° they combine with a measurable velocity, and, at lower temperatures still, combination can be observed on long heating." This entirely neglects the proof, due to Baker, that the mixed gases may be heated to the melting-point of silver (960° C.) without combination. Combination at lower temperatures is due to the incomplete removal of the catalyst water. The whole illustration, therefore, loses its point. One other suggestion may be made. With a view to the use of this book by electrical engineers, electrochemistry is dealt with more fully than is usual in text-books of similar length; but, from what we know of this class of student, we think the book would have been better suited to their needs had the illustrations in the electrical sections been drawn more largely from commercial processes.

Junior Chemistry. By R. H. Adie. viii+266 pp. (Clive.) 2*s.* 6*d.*—This introductory course has from some points of view much to recommend it. The author believes that the beginner in chemistry is apt to accumulate "a large store of experimental information without discovering to what end he is being led, while the pieces of chemical theory which are studied at intervals are apt to be disconnected from his experimental work." We should have thought this description applied to a state of affairs already almost passed out of existence; but, at all events, the conclusion is rightly drawn that the best way of teaching the beginner is by means of a series of researches arranged to form a complete series of chemical ideas. In carrying out this plan, the experiments described are, on the whole, well chosen and, in some cases, original. In selecting them great care has evidently been taken to ensure simplicity, cheapness, and ease of manipulation. Finally, the book is not overburdened with details of fact. Unfortunately, the defects corresponding to these advantages are present. The molecular hypothesis is introduced when only air, carbon dioxide, and water have been studied. Judging from some experience in teaching chemistry in schools, we should have thought it advisable to carry the qualitative and quantitative study of the non-metals as far as possible before introducing the molecular and atomic theories. They are, in any case, difficult for the average scholar to grasp. Again, doubtless in order to save time and to ensure simplicity of apparatus, the pupil is directed to prepare gases, such as carbon dioxide and nitric oxide, by throwing the solid materials used in their preparation into gas cylinders and adding the necessary liquids. It is surely sufficiently difficult already to keep junior students from careless habits in practical work! We notice also in places a misuse of terms which is certain to lead to misconception. Thus, on p. 67, the word *weight* is used as equivalent to *density*. It must also be pointed out that, throughout the book, the warnings which should precede the use of dangerous substances are insufficient. Thus we can nowhere find the precautions necessary in handling sodium clearly set forth. Experiment 129 is, in any case, unsafe in the hands of a schoolboy. Directions are given to cut thin slices of sodium, drop them into a tube containing chlorine, then, when the action is finished, pour a few drops of water into the tube. But what will happen in case of the very possible failure to use an excess of chlorine? These mistakes may easily be remedied, as may others, such as the directions in Experiment 117 to prepare hydrochloric acid from sulphuric acid without the addition of common salt.

Principles of Educational Woodwork. By C. L. Binns and R. E. Marsden. viii+310 pp. (Dent.) 5s. net.—It is stated in the preface that the aim of this book is to deal with the teaching and psychological aspects of educational woodwork. The book differs from most works upon this subject, inasmuch as more attention is given to the psychological side than to the mere description of definite schemes of work. In chapter i. the aim and scope of the work are clearly defined. Chapter ii., "The Child," emphasises the necessity for studying child-life if the best educational results are to be obtained. "Motor Training," "Interest and Attention," and "Discipline," which are dealt with in the next three chapters, prove very readable, and should attract the attention of every teacher of children. In chapter vi., "The Teacher and his Reading," valuable advice is given emphasising the need for a wide literary culture. Observation lessons (chapter vii.) show how lessons in handwork may be utilised to increase the powers of observation. Chapters viii., ix., and x. deal with trees, timber, tools, and other materials, giving just the necessary information to arouse intelligence. Drawing, a necessary adjunct to work of this description, is fully explained in chapter xi. Chapter xii. deals with benchwork, and is profusely illustrated with an admirable variety of models, although these are to be taken more as suggestions than as a complete scheme of work. A chapter on equipment of a handicraft room completes a book which shows in a clear and decisive manner the educational value of all types of handwork in the primary school. The book may be confidently recommended as containing many original features and much valuable information, and should be seen by all interested in educational handwork.

Educational Wood-working for Home and School. By Joseph C. Park. xiii+310 pp. (New York: The Macmillan Co.) 4s. 6d. net.—This book is evidently intended to aid in the development of wood-working as an educational factor. The introductory chapter sets forth in a clear and concise manner the value of handwork of all kinds, the necessity of its inclusion in school education, and by numerous quotations from well-known authorities illustrates the mental value of a systematic course of "learning by doing." The book is full of clearly stated descriptive matter, is well illustrated, and includes chapters upon tools, machinery, timber, fastenings, staining and finishing, constructive woodwork, wood-turning, and—in appendix form—the different woods in general use, geometrical terms, and useful tables of comparative measurement, weight, &c. A feature of the book is a brief history of many of the inventors of tools and appliances therein described. Although, perhaps, the author has elaborated unnecessarily many of the details of tools and machinery, the book can be recommended as one from which many new ideas may be obtained.

Ball Games and Breathing Exercises. By Alice R. James. 61 pp. (Longmans.) 1s. 6d.—This little book gives detailed instructions for graduated rhythmical exercises, each of which is designed for some special purpose. Dr. H. Campbell, in the preface, describes the exercises as not only producing agility, suppleness, and grace, but promoting a normal functioning of the organs. The book is adequately illustrated by diagrams, and may be commended to the notice of parents and teachers.

Pedagogy.

Social Education. By Colin A. Scott. xi+298 pp. (Ginn.) 6s.—The social motive, as distinguished from the philanthropic, is rapidly coming to its own in our educational thinking, and there is room for books dealing with the subject from the scientific and the practical point of view. As is not unusual, however, in our country, we are more eager to discuss methods of achieving a result than to make up our minds exactly what it is we think we want, and we take but a faint interest in the scientific analysis of the conditions of successful effort. Of course we muddle through more or less satisfactorily, and make use of the results of other people's patient investigations when at length they reach us. Dr. Scott's contribution to the matter in hand is in the main practical. After a brief examination of the school as a social institution, he gives us interesting accounts of the organisation of three famous experiments in school government and organisation—Abbotsholme, the monarchic type, characteristic of the country of its origin; the George Junior Republic, a children's State, modelled on the lines of the constitution of the United States of America; and the John Dewey School as it used to exist in Chicago. It was well worth while to put on record, and in an easily accessible form, the characteristic features of each of these schools. Equally useful and suggestive are the later chapters, in which the author describes his own experiments in schools of the ordinary type. The spirit of his work is worth noting. The author did not begin with any *a priori* views which he was concerned to establish, nor did he expect to arrive at an ideal course of study capable of being handed over to other schools. Surely this is sound. So long as teaching is "live" it will be marked by its infinite variety. Dr. Scott makes no attempt to deal with the problem of social education from the point of view of genetic psychology, nor do his references for further reading suggest such books as those of Natorp and Bergemann on *Sozial-pädagogik*.

Art.

Longmans' Complete Drawing Course. Part II. By J. H. Morris. 37 pp.; 53 plates. (Longmans.) 5s.—The perusal of this sincere and well-intentioned book gives rise to serious reflection as to the necessity for and the practical utility of books of this kind. If the drawing teacher is, as the Drawing Congress of last year declared emphatically that he should be, a master of his craft, such a collection of rules and platitudes is of no use to him. If, on the other hand, he is not sufficiently proficient in his art to work out his own salvation, he has, in the first place, no business to be teaching drawing, and, in the second, he is not likely to be able to benefit much by the many hints and suggestions here laid down. How, for example, would such a teacher profit by the advice given regarding Fig. 11, p. 16: "Estimate the distance from *a* to *e*" (which is the apparent length of a foreshortened cylinder), when it is this very point which is the crux of the whole drawing, requiring all the wiles of the teacher to demonstrate so that the pupil will *see* what it is and why it is so. It is difficult also to imagine how, assuming that he is no draughtsman, the teacher will be assisted by the two or three somewhat stilted drawings which illustrate the important chapter on drawing animals from nature. Putting aside, however, the broad, ethical question, the book may be considered a worthy successor to Part I., which was noticed in these columns some months ago. Though treating of familiar subjects on familiar lines, it contrives to present them in an attractive form, liberally illustrated. Those who feel the need of such guidance can be safely recommended to follow the lines here laid down by Mr. Morris.

The Analysis of Inanimate Form, or Object Drawing. By George H. Aurousseau. 20 pp.; illustrated. (Sydney: Angus and Robertson.)—A pathetic interest attaches to this little volume from the Antipodes, for herein are expounded, with all the detail and circumstance of a discovery, the old familiar rules and maxims for model drawing which have been the stock-in-trade of the drawing teacher for at least a couple of decades. If the drawings of a chair and of a silver tazza, which conclude the book, represent the results of this method of teaching, then it is to be feared that the system stands self-condemned. The best that can be said of the book is that it is sadly belated.

Lettering and Writing: a Series of Alphabets and their Decorative Treatment. By Percy J. Smith. Fifteen plates. (Batsford.) 3*s.* 6*d.*—A noteworthy feature of modern art teaching has been the revival, fostered and encouraged by the departmental authorities, of interest in ornamental typography. The results of this revival are to be seen in the improvement in the general character and arrangement of type used in printing and in the effort made by some of the principal business houses to use a good style of lettering in preference to that which is nondescript and characterless. This admirable series of plates by Mr. P. J. Smith summarises the evolution of the alphabet, and gives examples of the best and purest styles, details of construction, methods of spacing, treatment of borders, &c., and contains a host of information invaluable to the art student and craftsman. The plates are of a convenient size for class distribution, or they may be framed and hung up for reference in the studio or workshop. The charming inscriptions on Plate 15 are alone well worth the modest price charged for the set.

Clay-modelling in Manual Training. By F. W. Farrington. 24 pp.; 40 plates. (Blackie.) 3*s.* net.—This scheme of work, whilst deliberately and, one feels, somewhat unfortunately, neglecting the artistic possibilities of clay as a plastic medium, embodies a course of exercises in the construction of models in relief and in the round, of common objects and decorative forms, with the view of giving practice preparatory to the various handicrafts in wood, stone, metal, and so forth. Considered in this light, the book will doubtless adequately fulfil its mission, though many of the objects given lend themselves much more suitably and just as easily to construction in wood or wire or paper as in clay; and the author's disavowal of any artistic intent can hardly be accepted as sufficient excuse for the inclusion of such vase forms as those on Plates 13 and 22, or of the borders in Fig. 90.

Harbutt's Plastic Series. By W. Harbutt. *Plastic Brick-making and Laying.* 41 pp. 6*d.* net. *Easy Modelling for Infants.* 43 pp. 6*d.* net.—These little books will be of great assistance to those teachers who already know and appreciate Harbutt's "plasticine." Only those who have suffered from the disadvantages of clay as a material for children's modelling can realise the superiority of "plasticine" in its cleanliness and durability. For the kindergarten nothing could be simpler than the exercises in the little book on brick-laying, training the child's eye in accuracy, and forming an excellent beginning later to the study of design. The exercises in the second book are so well graduated that even the clumsiest little fingers will be able to manage in time the elaborate swan in the last illustration. The teacher of geography will find the advantage of these early lessons in modelling when the children come to make relief maps in the lower school, for here again great praise is due to "plasticine" as the unrivalled material for map-construction.

Work with the Brush. By May Mallam. 99 pp. + xxxiii plates. (Leeds: E. J. Arnold.) 5*s.* net.—This latest contribution to the bibliography of the brush is intended, according to the preface, to help those teachers in elementary schools who have not had the advantage of special training in brush-drawing. Those to whom this book will appeal will certainly have no cause for complaint on the score of lack of detailed directions, as the subject is dealt with from its most elementary stages, and most precise and minute instructions are given as to materials and methods. Whilst it must be remembered that the most voluminous of printed directions cannot take the place of actual practice and experiment, this book may be used safely as a guide by such teachers as are taking up for the first time this valuable and interesting form of hand-work.

A Course of Hand and Eye Training. By F. C. Stanley and J. Blackburn. 125 pp.; illustrated. (Longmans.) 3*s.* 6*d.*—This scheme of work embodies a course of exercises in the manipulation of paper and cardboard, intended to bridge over the gap which often exists between the manual occupations of infants and the handicraft of older boys. Based on sound geometrical principles, the numerous and varied exercises bear *prima facie* evidence that they are the outcome of practical and thoughtful experiment, and may be unreservedly recommended as a working basis for a course of manual work in the junior forms of secondary schools.

Nature and Design. By Herbert R. Weller. Fifty-five plates. (Charles and Dible.) 2*s.* 6*d.* net.—This book illustrates, by means of a series of tasteful and well-drawn plates, the close relationship between nature and ornament, and teems with suggestions whereby the natural forms may be conventionalised and translated into simple designs, space fillings, &c. The connection between the design and the arbitrary terms of the "Principles of Ornament"—*e.g.*, Unity; Stability; Fitness; and so forth—is not always made manifest, and one has the impression that they have been dragged in by the heels as a concession to departmental requirements. Taken altogether, the book merits a foremost place among the many devoted to this subject, and should prove a fruitful source of inspiration to both teacher and student.

Miscellaneous.

Syllabus of Lessons on "Temperance" for Scholars attending Public Elementary Schools. Issued by the Board of Education for official use. (Wyman.) 2*d.*—While hopeful that suitable "instruction on the subject of 'temperance,' in its restricted sense," may eventually be given by the regular staff in elementary schools as a part of the teaching of the elementary rules of personal health, the Board of Education recognises that some schools are as yet destitute of teachers possessing the requisite knowledge and training, and that the extraneous teaching upon which they have hitherto had to rely has not invariably been altogether satisfactory in either matter or method. With the desire that the teaching given on this difficult matter shall be both "accurate in statement of facts and suitable in its manner of presentation," the Board has issued this "model" syllabus, which sketches three lessons on the subject, the first dealing with eating and drinking, food and its use; the second with alcohol—effects of alcoholic beverages on the body; and the third (intended only for children over twelve) concerning the evil

consequences of intemperance to the individual, to the home, and to the State. The syllabus itself is followed by some fourteen pages of notes—explanatory, illustrative, and statistical—for the use of the teacher; and Sir Robert Morant contributes a prefatory note, admirable for its judicial lucidity, in which he enforces the importance of simplicity, accuracy, and restraint in dealing with a subject too frequently treated in a controversial or partisan spirit, and apt to become overloaded with bewildering, and even misleading, detail. This syllabus will be welcomed by very many outside the immediate circle of elementary-school teachers, for the inverted commas which enclose the dominant word of its title strike a note which has been for too long lacking in much of the literature that has lately appeared in connection with this subject. This note of moderation is maintained throughout, and adds a striking gravity to the simple statement of facts which are used to enforce the paramount importance of moderation in all things. Space allows of the quotation of no more than two sentences in illustration: "The teacher will know that a temperate life depends mainly on good habits and the appreciation and practice of a few simple and direct rules of health and conduct, and is therefore largely a matter of good training." And "Instruction on the subject of 'temperance' should itself be temperate, and should make a sober appeal to such reasoning capacity as a child possesses and to the ideas of decent, self-respecting, and dutiful living which every good teacher endeavours to present to and cultivate in the children under his charge."

L'Éducation dans la Famille (*Les Péchés des Parents*). Par P. Félix Thomas. xi+255 pp. (Paris: Alcan.) 3 fr. 50 c.—Prof. Thomas is well known as a writer on educational subjects, and sincere thanks are due to him for writing this admirable popular work on the duties of parents. Drawing on his extensive experience, he writes chapters on various aspects of the home education of children from the cradle to beyond adolescence. He touches on such subjects as *les remplaçantes* and *les enfants-poupées*; the value of fresh air and the danger of premature indulgence in alcohol and tobacco; the need of discipline; the training of the intellect and of the will. A chapter is devoted to the problem of enlightening the young in sexual matters; in this connection we would direct the attention of our readers to the epoch-making work "Am Lebensquell, Ratschläge aus dem Preisausschreiben des Dürerbundes" (published by Köhler, Dresden). Of particular interest are the chapters on religious education. Although the work is written for the French parent, and not all the criticisms and suggestions apply with equal force to our conditions, no one can read the book without advantage. As the publisher says: "Cet ouvrage ne sera pas utile seulement aux éducateurs de profession, il le sera à tous les pères de famille."

A Life of John Colet, D.D. With an appendix of some of his English writings. By the late J. H. Lupton, D.D. New edition. xiv+324 pp., with portrait. (Bell.) 8*s.* 6*d.* net.—Dr. Lupton's "Life of Colet," first published in 1887, is here reprinted intact, except for a few corrections noted by the author in his own copy. The reprint is welcome in view of the recent four hundredth anniversary of the founding of St. Paul's School. It is the life of a great man, remarkable also for the soundness of his educational views. There is a good deal here about the founder's system, and about mediæval school books, which must interest readers of The School World; the Statutes of St. Paul's are given in full in the appendix.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in The School World *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

Geography as a School Subject.

In matters geographical it will perhaps be opportune if some attempt be made to define the limits within which the teacher of geography may be expected to work; consequently this attempt to open a discussion on the subject.

Perhaps the first question to be settled is the attitude to be adopted towards the border-line between geography and astronomy: is the teacher of geography to base his argument upon the real or apparent movements of the sun? Do the questions of the length of day and night, the angular altitude of the sun, and of the determination of latitude by solar or stellar observations properly belong to geography? Should they not be determined in a course of observational nature-study? Or, if this latter course be not taken, what is to be done?

Next arises the relation between geography and meteorology: provided the pupil knows the elements of meteorological observation sufficiently to apply the established results thereof, to what further degree is the teacher of geography to make his pupils weather-wise? To what extent is it valuable geographically to study the daily weather report regularly in reference to the daily weather changes of our own islands?

Then follows the question of the relation between geography and geology: to what degree is it our business in the lessons on geography to introduce rock structure and rock composition, and proceed to the discussion of soils, &c.?

The study of man's environment on the earth may be descriptive or scientific, or a combination of these; if descriptive, it may begin with history and proceed to geography as developed therefrom, or it may describe what exists now and pass on to what pre-existed; if scientific, it may ignore all wherein causal connection of sequence or co-existence be not manifest: which general method is to be adopted, or is any general method to be advised exclusively?

These are some of the questions which must be answered before one attempts to make a school syllabus in geography, and it is possible that teachers of geography will discuss the subject profitably for us all, so that in time, when a consensus of opinion has been formed, the makers of lantern-slides, for instance, will be able to provide exactly that kind of slide which fits school work instead of the merely pictorial slides which are available now.

B. C. Wallis.

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THE TRUE OBJECT OF HIGHER EDUCATION.[1]

By H. A. MIERS, M.A., D.Sc., F.R.S.
Principal of the University of London.

I WISH to take this opportunity, while I am addressing so earnest and zealous an audience of students, to direct attention to a possible danger which attends the provision of all increased educational facilities. Now that so much is provided for the London student, now that he can choose his subject, his teacher, his college; now that everything is at hand, good instruction, libraries, laboratories; there is a danger lest both he and his teachers forget that all this is useless without effort on the part of the student, effort of the sort which the pioneers of eighty years ago were obliged to exert. There is a danger lest the process of education be more and more regarded as a process of putting something into the student, or of moulding and fashioning him for the work which he has to do. I had occasion a short time ago to address the students at University College, and told them that, in my opinion, the results of teaching depend far more upon the individual effort of the learner than of the teacher. It seems a fairly obvious thing to say—and I do not wish to repeat myself in addressing you—but the fact is so easily overlooked at the present day, when so much is done for the student, that it is worth repeating. With an increased and improved organisation of the methods of teaching it becomes less and less necessary for the student, when once he has entered upon a course, to exercise his individual judgment or to incur the intellectual effort involved in this process.

It is unfortunate that a university which prescribes the courses of approved teachers, sees that they are duly followed, and tests the result by examination, cannot at every step and for each individual gauge the personal effort which he has made. After all, that is the important thing from the learner's point of view, and unsuccessful effort may be just as useful and as valuable in the cause of real learning and wisdom as that which is crowned with success. Every student of science knows that a carefully performed experiment attended by a negative result or even by failure may be of the very greatest value, and ultimately prove as important as those which lead to positive results or success. Of course a very great stimulus for effort of a certain sort is supplied by examinations, whose grim shadow hangs over the student's path at every stage of his career. But it is a melancholy reflection that if the examination stimulus were suddenly taken away, a very great number of English students would as suddenly lose the real incentive to intellectual effort. It must be understood that I am not decrying the examination system or proposing that any other should be adopted in its place. It has its great virtues of impartiality and directness although it may have its serious faults. But what I would urge is that it is not a bad thing to pause every now and then and ask ourselves—what would be the result upon my work if the examination for which I am preparing were abolished to-morrow? If we have any real interest and real enthusiasm for our work they ought to persist after the examination has gone, just as they ought in ordinary circumstances to exist side by side with the zeal and the excitement stimulated by a healthy spirit of competition. And my argument is that, if our work will not stand that test, then we are not putting into it any real intellectual effort of the better sort.

I will mention presently some of the tests by which we may assure ourselves that we are making such effort.

The earliest Mechanics Institutes, which laid the foundation of modern popular education, were established first as Mutual Improvement Societies in which the members combined to assist themselves and each other; they were strongly individualistic in character, and they relied mainly upon individual effort, self-help, and the voluntary co-operation of individuals. They came at a time when efforts were being made to reform even school teaching in this spirit, and to employ picked pupils as teachers of their fellow-pupils in the new type of school formed under the auspices of Lancaster and Bell.

The Birkbeck was founded primarily to give to

[1] From the inaugural address at the opening of the eighty-seventh session of Birkbeck College, London, on September 27th, 1909.

men instruction in the arts they practise, as well as in the various branches of science and useful knowledge. At that time the working classes learnt their trades as apprentices by rule of thumb, and no provision was made that would enable them to acquire any knowledge of the principles involved.

Now, although the Birkbeck has long ago ceased to be a Mechanics Institute, and although the education which it provides is no longer elementary, but advanced and of a university character, it appears to me that there is no reason why these two features should not be preserved in the modern college. The need for individual effort and the desirability of understanding the principles which underlie our work in life are just as cogent as they were eighty years ago, and are equally so whether we are preparing for a trade or a profession. And so I have taken this as the text of my little sermon, that the personal and combined efforts of students in such an institution as the Birkbeck should be devoted to a mastery of principles. This object can be pursued in all the studies which prepare for any profession or occupation, and is the great aim of higher education, which should lead us on, not so much to amass facts and acquire knowledge, as to understand principles and acquire wisdom.

Has it ever occurred to you that it requires a much greater intellectual effort to understand general principles than to learn facts or to remember the details upon which those principles are founded? The one is to a large extent an exercise of memory, and the other is to a still larger extent an effort of thought. And the reason why I would emphasise this difference is this: so much of the preparation for examination is the acquisition of learning, and the faculty that an examination tests is so pre-eminently the memory, that in the stress of modern examination work it becomes increasingly difficult to think about first principles, and many a successful examinee endeavours to learn them without understanding them.

And this, I believe, is where the intellectual stimulus is to be found if the examination stimulus be taken away. There is no great intellectual interest in facts themselves unless they set one thinking, in other words, until they are illuminated by an idea. Familiarity with an oft-repeated event is apt to breed contempt for it, but to the thoughtful mind each repetition brings renewed interest.

Have you ever thought what life must have been like to Charles Darwin, whose active mind, possessed by an absorbing idea, could doubtless find the keenest intellectual pleasure in almost every event that took place in his simple life? Scarcely anything that he could observe would fail to have an interest for him viewed by such a reflective mind in the light of so far-reaching a theory. A mind that is satisfied with the collection of facts without caring what they mean or whither they lead is working on a lower plane and with an interest of a different sort. The two things are, of course, not incompatible, as indeed we see from the example of Darwin himself, and a man is all the better an observer if he is inspired by a principle, or if he is searching for one.

This is by no means confined to science alone, but is equally true of all studies, history, literature, language, law, or whatever they may be.

To a child at school there is an interest in every new thing, and like a butterfly the child's mind takes a positive pleasure in flitting from one to another in an absolutely inconsequent fashion, but in the higher and more advanced study that belongs to a university our work should be inspired by quite a different spirit.

Things may have to be stated dogmatically to beginners at school, but too often the text-books go on in the period after school life along the same lines, forgetful of the fact that there has not yet been much time or opportunity to reflect upon the first principles which were then learnt or assumed.

The attitude of mind which should be adopted in university work is, I think, represented by the questions—What does it mean? Why does it happen? What does this establish?—applied to everything that we learn, and asked at every turn in our progress.

If I may confine myself for a moment to a scientific illustration, many elementary text-books on scientific subjects used to begin—some of them still do begin—with a statement of certain general principles, and the whole book was devoted to the object of illustrating those principles by examples; but from beginning to end there is no revision of the situation, no discussion of how far the principles are really established by the evidence, no endeavour to show what unsupported assumptions underlie them, no criticism of the difficulties or objections.

How different from the method of Darwin in the "Origin of Species," where as much thought is devoted to criticising the adverse evidence as in establishing that which is favourable; a feature which makes that book far more interesting to read than most scientific treatises: for after all the human mind loves nothing better than argument.

And so the result is that in many a text-book the first chapter, upon which everything is supposed to hinge, is as unintelligible to the reader as the first chapter of one of George Meredith's novels on a first reading. Take the first sentence of Ganot's "Physics": "The object of physics is the study of the phenomena presented to us by bodies." A student reading the book for the first time who set himself to work to discover the meaning of that sentence would have to think a great deal, but, of course, the elementary reader passes it by without question and without understanding it, and goes on to something more interesting. Ira Remsen's text-book on Chemistry begins with the words: "The sensible universe is made up of matter and energy." What can this mean to the beginner?

I merely take the first two books that I happen to lay my hand on. Contrast with this the open-

ing sentence of a book which is devoted to the examination and criticism of general principles in another science—Suess's "Face of the Earth":

If we imagine an observer to approach our planet from outer space, and pushing aside the belts of red-brown clouds which obscure our atmosphere to gaze for a whole day on the surface of the earth as it rotates beneath him, the feature beyond all others most likely to arrest his attention would be the wedge-like outlines of the continents as they narrow away to the south.

It is not only a difference of style, it is a different attitude of mind, the attitude of the earnest inquirer which should be that of every student; the difference is that between the assertion of a principle and the search for a principle.

Most text-books of physical science begin with assertions concerning atoms and the atomic structure of matter, and until a very recent date anyone who questioned this all-important principle and tampered with the sanctity of the atom was to be regarded as one who had spoken disrespectfully of the equator. And yet, when we think what widely different views are now held by leading thinkers since the recent revolution in physical science, and the hard struggle which the atom will now have to preserve its independence, we see that the evidence cannot really have been so convincing as was supposed—at any rate differences of opinion are possible—and may begin to suspect that in science, as in other regions of human thought, the more positively a proposition is asserted the less secure are its foundations likely to be.

I know, indeed, one popular elementary textbook in a natural history subject which begins with the words: "The atom is the smallest conceivable portion of matter." I wonder how many of the students who have used it ever paused to consider what those words might mean, and to what conclusion they would lead if the interpretation be correct.

Among manuals of elementary science which are so written as to make a reader think, Clerk Maxwell's little book entitled "Matter and Motion" stands pre-eminent, and I would strongly recommend any student of physics who wants to know how a text-book can fulfil this object to invest a shilling in its purchase.

Every theory in science, literature, or art is liable to be replaced by a better, and is therefore a fair subject for criticism, and I believe that the way to get a firm hold of first principles is to discuss and criticise those theories which we are far too ready to accept as proved.

All work carried on in the true spirit of research is a continual test and criticism of the current theories, and it is either by their confirmation or demolition that our principles are to be more firmly established.

Let me quote to you the account that Darwin gave of his own mental characteristics in his autobiography:

From my early youth I have had the strongest desire to understand or explain whatever I observed—that is, to group all facts under some general laws. These causes combined have given me the patience to reflect or ponder for any number of years over any unexplained problem. As far as I can judge, I am not apt to follow blindly the lead of other men. I have steadily endeavoured to keep my mind free so as to give up any hypothesis, however much beloved (and I cannot resist forming one on every subject), as soon as facts are shown to be opposed to it. Indeed, I have had no choice but to act in this manner, for with the exception of the Coral Reefs I cannot remember a single first formed hypothesis which had not after a time to be given up or greatly modified.

However, I must explain more fully what I meant when I said just now that the personal and combined efforts of students might well be devoted to a mastery of principles.

It is a great virtue of a college and of collegiate life that a number of ardent spirits interested in the same subjects and employed in the same studies are brought together, and if this union does not lead to combined intellectual effort on the part of students themselves I think that one of the great opportunities of college life is lost.

Not only is it a great help and stimulus to the teacher that he should be teaching a class of keen students rather than a single individual, but it should be a great help to the students themselves. And if they would come together and in their clubs and societies debate and discuss, not the details, but the principles of the subjects at which they are working, I believe that in the cause of their own education they could do as much as, if not more than, any teacher or book or examination can do for them.

At the residential colleges of Oxford and Cambridge with which I am familiar the clubs and societies are a very powerful factor in the intellectual life of the place, but there is no reason why this result should be in any way dependent upon a residential system. I am glad to see that you have your clubs and societies, not only the Students' Union, but physical, chemical, economic, classical, natural history, musical, and sketching societies.

If these really devote much of their attention to criticising general principles, and so supplement the ordinary routine of class work, then I have to apologise for making this subject the theme of my address, for you are already doing what I counsel.

But I know that in the colleges with which I have personal acquaintance there is a great tendency to develop oratorical display, or to read papers on subjects which do not lead to division of opinion, or such as stir a deep intellectual interest. That sort of discussion is sometimes reserved for political subjects, and in many schools, and I think also in some colleges, it has become rather a fashion to exhibit interest in other things, but not in the school or college work, whatever you may really feel about it.

I would except the debates at philosophical societies: they generally do lead to interesting discussions on the subjects of university study, in

which the speakers evidently feel very strongly and are provoked to think seriously. What I advocate is that in your clubs and societies you should not forget to deal with the philosophy of your special subjects if you wish to stir a real intellectual interest.

In these times of strenuous work, in which there are so many subjects to learn and so little time to go in a leisurely and thoughtful manner into any one of them, I would welcome anything tending to prevent our regarding college work as divorced from the intellectual realities of life, or as incapable of inspiring as much intelligent interest as political or social problems.

It is perhaps owing to the shyness which is part of our national character that English people are often reluctant to discuss the things which they feel deeply or on which they have real convictions.

A few months ago I had with me a Russian, who said that the great difference which struck him between the manners and customs of social life in England and Russia was that in Russia people who meet even for the first time in ordinary social intercourse have no hesitation in entering at once into a discussion of religious matters, though they would not think of discussing politics; whereas in England, although we do not hesitate to discuss politics with our neighbours at the dinner-table, or in the railway carriage, or wherever we happen to meet him, we never think of talking about our religious convictions. This seemed to him to be simply due to a sort of intellectual shyness: and I think he was right.

To conclude, then, and to repeat what I wish to regard as the object of this address: let us in our student days make the great personal intellectual effort which is necessary in order to grasp for ourselves the principles, the philosophy, of our subjects. This we can really only do for ourselves; it can never be fully acquired from our text-books or our teacher, for it has to be done by thinking, not by learning. And let us not be ashamed to make them the subject of our conversations, our discussions, our club and society debates. They are the principles of the arts which we shall go out into the world to practise, and without them we shall leave our college as badly equipped as artisans trained by rule of thumb, and with none of that wider and deeper knowledge which enables a man to turn his skill to good account.

The Wonderful House that Jack Has. By C. N. Millard. xii+359 pp. (New York: The Macmillan Co.) 3s.—Jack's "wonderful house" is his body, and the author has given an account of its architecture that will interest and impress children enough to foster the habits most likely to ensure their future health. His style is simple without being puerile, and racy without sacrifice of accuracy. Mr. Millard's attitude towards alcohol and tobacco is uncompromising, although it is expressed temperately; and his readers are not likely to be goaded to antagonism by his arguments, a not uncommon result of special pleading. The book is well printed and bound, and attractively illustrated.

THE FACTORS OF RISK AND OF SAFETY IN SCHOOL ATHLETICS.

By C. E. Shelly, M.A., M.D., &c.
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NEARLY half a year has elapsed since a certain amount of perturbation was aroused in domestic circles by the acute but short-lived discussion which raged round a letter published in the *Times* strongly advising the prohibition of races exceeding one mile in length for lads under nineteen years of age. Public interest was temporarily aroused, not so much by the letter itself as by the almost hysterical exaggeration attached to its significance in certain quarters. The bubble speedily burst, and the hubbub has long subsided; but the advent of another football season is not inopportune for attempting to review the question of school athletics in the light of those revelations provoked by a brief campaign of alarmist allegations. There are at least two sides to every question, and both must be fully recognised and their relative importance fairly weighed in any attempt to discover the weak points and to estimate the advantages of an existing system which exposes itself to criticism.

From its earliest age, exercise is as necessary and as beneficial to the child as to the adult; and it is commonly recognised that the exercise undertaken by the child will rightly become more prolonged and more strenuous in character as his growth and age approach maturity. As a broad generalisation, it is true that the kind of exercise, and the degree of its severity, which healthy children may practise with safety and advantage is proportionate to their age. But this is not necessarily true of any one individual boy or girl; and one weak spot in the "warning letter" to which allusion has been made appears in the attempt to fix a definite age-limit in relation to a specified form of exertion. No vast experience of schoolboy physique is needed to furnish clear evidence that there are a good many lads of nineteen not fitted to run a race of one mile in length, while there are not a few of their fellows, their juniors by one or even two years, who might quite safely be allowed to do more. In other words, it is not his age, but his physical capability (which may, or may not, bear its normal proportion to his age), by which alone the individual's fitness for any particular form of exertion can be gauged. And there is an apparent inconsistency in recommending an age-limit for the mile race, and for that race only—in that it implies a sanction of the quarter-mile race for younger boys, in face of the quite definite opinion held by the majority of athletes, who regard a race over that shorter distance, usually run at top speed from start to finish (and perhaps the half-mile also), as being far more exhausting and involving a greater strain than obtains in the race for the mile, which is, for much the greater part of the distance, run at a more moderate pace. One other point may be noted: not in any spirit of hypercriticism, but as

illustrating the danger which attends the publication of loosely worded aphorisms over weighty names—the tendency of the public to deduce inferences therefrom in accordance with their own particular views, and to attach to those inferences an authority equal to that which is accorded to the initial pronouncement. There are, for instance, at least some folk capable of inferring that any youth, whatever his lack of development and training, is justified in exposing himself to the most arduous and prolonged physical strain so soon as he has passed his nineteenth birthday.

It is not, however, probable that anyone would seriously dispute the conclusion that the ability or otherwise of any boy or girl to engage with safety in the ordinary sports and games of English schools depends upon two factors: first, the individual's physical capacity; secondly, the conditions under which the exercise in question is practised.

In order to determine the first, we want answers to two questions: (*a*) Is the individual physically "fit"—healthy in body and sound in wind and limb, as the phrase goes? (*b*) Has he or she had such practice and training in the exercise as would justify an extension of its strenuous character? And neither of these two questions can be answered off-hand. In dealing with the former question, the bodily condition of the individual must be examined, and as much as possible of his previous personal history should be ascertained. To this end the physical examination of each "new boy" by the medical officer of the school at the time of his entrance is required; and although here and there objections, mainly theoretical, have been raised against it, the opinion of all those acquainted with the schools at which it is made a rule is most strongly, and we believe quite rightly, in its favour. It secures the immediate recognition of cases of obvious unfitness, and —more than that—enables the cure or alleviation of their disabilities to be taken in hand forthwith; it prevents those to whom any doubt attaches from being exposed to avoidable risk before that doubt has been resolved in one direction or the other; and it often attains for a boy who has hitherto been regarded as "too delicate" to share in the active companionship of his schoolfellows the huge advantage of being put in the way of meeting them on equal ground. But, supposing that the new boy has come satisfactorily through his physical examination; this is not in itself a proof —though it may justify a presumption—of his powers of endurance. The normal action of a heart at rest, for instance, does not necessarily indicate how it will respond to the strain of active exercise. That can only be ascertained by making it do extra work of a certain character, and noting the effect thus produced upon the breathing, the circulation, and the general bodily welfare. Hence the importance of an intelligent supervision of games and exercises, which need in no wise be obtrusive in its nature, in order to detect the signs of over-exertion on one hand; and to determine, on the other, whether a certain physical task is being accomplished with so much ease as to justify the attempting of another rather more severe. Signs of "slackness," an absence of the natural vigour and alertness, equally with evidences of unusual or premature fatigue, thus noted, will prompt a timely inquiry as to physical condition, personal habits, and the like, thus forestalling the development of more serious results and perhaps securing the recognition of some illness in its earliest stage.

The conditions under which a particular form of active exercise is undertaken are of no less importance, although more readily determined. For the one great rule of safety under this heading is that the game or competitive exertion is safe enough for a healthy lad if it be shared in by his compeers, *i.e.*, by those who are approximately his equals in physical capacity and training. In the course of the very full discussion which was held at a meeting of the Medical Officers of Schools Association, specially convened for this purpose, early in the present year, it was notable that the most trenchant critics of "long" races in public schools were in practical agreement on this point. Sir Clifford Allbutt, speaking from a ripe experience, expressed the belief that the young and healthy heart was so resilient that it was impossible for any harm to be done to it by any effort which the boy's own muscular exertion was able to entail upon it; and Sir Lauder Brunton, collating the experience of the successful athlete and that of the successful trainer for the turf (whose horses undergo severe exercise, but who does not race his yearlings against five-year-olds) quoted as the golden rule: "The great thing is not to call upon them for more than they can do." The opinions expressed by these and other speakers possessing exceptional knowledge of the subject might be thus summarised: the sound and healthy boy is not liable to suffer damage if he competes with those who are approximately his equals in age and physical capacity under conditions of proper training and supervision.

In any school which does its duty by its pupils, "the sound and healthy boy" is selected by means of (1) the physical examination which he undergoes, and (2) the intelligent supervision of his games and exercises; which marks his progress upwards through the school; and, in the later years of his school life, accepts or rejects him as one of the relatively few entrants who are allowed to compete in, for instance, the long and more arduous races which are open to the older boys only.

It may be said that the healthy schoolboy is always "in training" for any form of exercise in which he can be ordinarily called upon to compete. For his "athletic sports," some slight modification of his everyday diet, such as abstention from the more seductive wares of the "tuck shop," and from some specified dish at table, is recognised as desirable, and is commonly practised; and, with one all-important exception, the ordinary regimen and diet fairly meet his needs.

But there is no school—no large school, at all events—which allows, much less insists upon, an interval of sufficient length between the end of the midday meal and the beginning of active exercise after it. There is no exaggeration in regarding this as the great danger-blot on our public-school system; and it is one which cannot be justified. The fact that complete mastication of the food provided has already become almost a lost art intensifies the serious risk which attends strenuous exertion of any kind too soon after a full meal.

The writer has been able to learn of no more than four fatal cases in connection with school games and athletics of all kinds. Indeed, the summer holidays of one single year have furnished a larger number of deaths amongst schoolboys engaged in sports and pastimes than are known to have occurred under the same heading amongst boys at school during the past fifty years. One of these four was due to an accident quite unique in its character, wholly unavoidable and unforeseeable; a second occurred during a competition in long distance diving—a practice entailing special strain upon the heart and lungs, and that under peculiar risk, and one which has long been condemned and is now practically abandoned so far as concerns young adolescents. Both the other two fatal cases occurred in healthy boys, and were directly dependent upon the pernicious practice which has just been touched upon. One lad succumbed in the course of a short "run" undertaken soon after dinner; the other, strolling into the playground after a full meal, swung himself on to the horizontal bar for his own amusement, took two or three turns, and fell to the ground dead. Immediately fatal results such as these are rare indeed; but no small amount of mischief, insidious in its effects, because not always attended by results provoking immediate distress or even discomfort, is traceable to the practice of permitting active and prolonged exertion to be undertaken while the stomach is loaded with a meal which has often been swallowed with undue haste and without any approach to proper mastication.

The healthy boy's heart is vigorous enough to cope with any reasonable task, and his digestion is more rapid than is that of the adult; but the nervous sympathy between the two sets of organs is most intimate and effective, and no small proportion of the "weak" or "dilated" or "strained" hearts, of which report is made from time to time, owe their origin and development solely to the neglect of a precaution which is, after all, eminently reasonable and certainly necessary. Such cases may come within the cognisance of an eminent consultant who, recognising the physical abnormality, and connecting it with the vigorous exercise which has been indulged in by an active and perhaps ambitious lad, sometimes fails to inquire into one of the most important conditions under which such exercise was undertaken. This omission is fortunately far less common than once it was; indeed, some of the most famous physicians of the day are the most severe critics of the absence of a sufficient interval of time between the midday meal and active exercise which mars the system "of even our best and largest schools." They lay no less stress upon the need for special care in relation to another matter—one which accounts for practically the residue of those cases in which "damage to heart and lungs" is credited to the abuse of physical exercise in schools, viz., the prolonged physical disability which so often follows some of the common illnesses of early life. Rheumatism, diphtheria, measles, and influenza (even in its least severe forms) are all apt to leave behind them a definite depreciation of heart power which may persist for long after convalescence appears to have been thoroughly established; and this is particularly the case during the years of rapid growth. The danger is all the more real because it is insidious; for the individual may appear quite equal to all the demands of ordinary life, and yet prove to be lacking in the ability to meet slight extra strains without being seriously affected by them. Hence boys and girls who have apparently recovered from any of these maladies need not only to be examined medically, but also to be watched carefully as they begin to resume their usual games and exercises; and this with especial care in reference to any form of prolonged or strenuous exertions which may be in view.

The above considerations include the most important of the recommendations embodied in the group of Resolutions issued by the Medical Officers of Schools Association in relation to the subject of school athletics, a copy of which was published in these pages in April last; although we should not omit a reference to the warning issued in regard to hockey. This game has obtained a wide popularity in girls' schools during recent years, and it is very necessary that the strain which it involves—"it is more exhausting than football"—should be fully recognised. There is ample evidence showing that a considerable number of girls suffer physical damage as the result of a too ardent devotion to this game, and it is important that they should not be allowed to play to excess, or to play at all if they are for any reason unfitted to withstand the strain which its sharp bursts of effort entail. Moreover, it is obvious that similar precautions in the way of medical examination, the proper selection of exercise and its gradation in relation to individual capacity, are not less necessary in regard to girls than to their contemporaries of the other sex.

I have said nothing of the value—moral, mental, and intellectual, as well as physical—of English school games, or of their importance as a branch of education, because all this is recognised by those who give an intelligent concern to the subject. The exaggerated and alarmist statements which have been made concerning the alleged disastrous results "practically universal" which attend the public-school system of athletics I have barely alluded to, because those extravagant statements failed under examination, and remain unsubstantiated. If anything approaching the appalling descriptions given of everyday disasters

had a real existence, the medical officers and other authorities of the schools must have been cognisant of it; definite inquiries instituted in these quarters elicited evidence which was all the other way. Negative evidence is admittedly of little value by itself, but it attains a concrete worth when evidence on the other side is not forthcoming. And, were it true, for instance, that any large proportion of the lads leaving our great schools are more or less physically damaged for life, some corroborative evidence should be forthcoming from the great universities which nearly two thousand of them enter every year. Yet all the medical authorities resident in Oxford and Cambridge agree that cases of damaged heart or lungs traceable to athletic exertion while at school are almost unknown amongst the undergraduates.

I have pointed out where certain dangers do lie, and in what way physical harm may be, and has been, incurred through the neglect of certain precautions equally reasonable and necessary. And I have quoted from the "Resolutions" which indicate the precautionary measures by which "the risk of strenuous sport may be reduced to an insignificant minimum." These Resolutions are essentially a collation of the practice which (with one exception) obtains in our great schools; and it is quite easily within the collective power of English parents to secure the universal adoption of them all, thereby assuring to themselves the satisfaction of feeling that, so far as human care and foresight may achieve it, the physical welfare of their children at school has been secured.

But if there be one thing more than any other to be impressed upon parents as important when they inspect the school to which they think of entrusting a son or daughter, it is a satisfactory answer to the inquiry whether a sufficient interval—"one hour at least"—is provided and insisted upon between the commencement of active exercise and the termination of the previous meal.

THE SCHOOL LECTURE.

By EDITH A. BROWNE.

THE growing popularity of the school lecture challenges examination of its value as an educational medium. Is it in the best interests of the school world to encourage the development of the lecture method of instruction, and, if so, what are its possibilities, wherein lie its pitfalls?

It is a noteworthy fact that the system of supplementing the teaching staff by visiting lecturers has been more widely adopted coincidently with the wider meaning given to education in recent years. Like trained teachers and revolutionised text-books, the school lecture is undoubtedly a sign of progress. With the view of substantiating this assertion, let us take a glance at the lectures which have found favour amongst the organising authorities of many of our best-governed schools.

The subjects embrace music, literature, art, and architecture as witnesses of a broader outlook on culture. In days not long ago the scholastic method of culture was limited to practical training in fashionable accomplishments, and there was a tendency towards general depreciation of the student who had little or no executive ability. There was no recognition of the appreciative faculty, no attempt to cater for it, no effort to train it. Latterly there has sprung to life a feeling that if future generations are to be endowed with power to raise the national standard of culture, the present generation must be given opportunities of cultivating and developing good taste. This feeling owes its origin to many modern sources of enlightenment, and amongst them, without a doubt, to numbers of headmasters and mistresses who are animated by broader ideals than their predecessors. A demand for school lectures on artistic matters followed as the result of a steadily growing conviction that the pupil who cannot draw a straight line, play a note of music, or write a poem, may nevertheless have a capacity for enjoying to the full all the beauties of a master-painter's pictures, a master-musician's compositions, or a master-poet's songs; this conviction gave birth to a new sense of responsibility in seeing that the school curriculum should help to foster such refined senses as make pleasure an elevating influence in life. By dealing with the highest achievements of the finest creative faculties that have enriched the world, artistic lectures have the power to awaken any appreciation that may be lying dormant in youthful hearts and minds, and further to develop that faculty in cases where it has already been aroused; at the same time, by holding up to example the artistic triumphs of the past, they can also stimulate any creative power that may be present in the audience.

Again, a prominent position has been gained in the lecture programme by travel causeries. It seems but yesterday that the geography lesson meant a dull round of capes and bays, mere names chronicled as memory tests on the lifeless sheets of the old-fashioned text-book. The much-improved modern geographical text-books are handicapped by the long-established reputation under which geography has laboured as the student's pet aversion; but they are beginning to break through prejudice, and, as they have a strong tendency to combine with facts and figures some of the best qualities of a travel book, they should soon place geography amongst the most popular of studies. In the travel lectures they have a powerful ally, for, in the eyes of those who have not seen, a foreign country becomes more of a reality when it is verbally described by someone who has taken part in its everyday life. The utility, the wisdom of any effort to give geography a chance of wielding its power of fascination, cannot be overrated. The life-story of the world and its people, weaving itself round the marvellous achievements of natural forces, the whole wealth of natural beauty and the countless adventures of commerce and exploration, is

capable of stimulating both the intellect and imagination. Given favourable conditions under which to exert its influence, geography is bound to extend the youthful horizon, and to persuade the rising generation to think imperially and internationally as well as nationally and locally.

History, sociology, civics, and topics of the day also find a place in the school lecture syllabus, among subjects more usually dealt with in the ordinary curriculum. Speaking generally, it may be said that the demand for lectures on subjects included in the daily routine is based on the principle of foreshadowing the possibilities opened up by study with the view of showing the student how well worth his while it is to work. And the demand for lectures on subjects with which there is no time to deal in actual lesson hours springs from a desire to equip the student so far as possible with general knowledge, and to make him conversant with leading contemporary events throughout the length and breadth of the world. In a word, lectures are regarded as a means of imbuing education with greater vitality, more humanity. Even in this brief sketch of their possibilities, space must be found for one special purpose they can serve. They can play the part of sign-posts to intellectual and artistic hobbies which may be taken up after school days are over, and possibly help in the choice of a congenial career.

Obviously, then, school lectures should be encouraged. But anyone who makes an effort to widen his sphere of activity is burdened with a great responsibility. In the best interests of education it must be frankly admitted, clearly explained that the views set forth herein up to the present bear on lectures in the abstract, and are based on the supposition that they approximate an ideal. We must now analyse that ideal and endeavour to discover when and how the actual lecture is likely to fulfil such purposes as have been suggested.

No matter what the subject, the value of a lecture depends largely on the lecturer's personality and mode of delivery. The latter stipulation is essentially a tangible one on which it is possible to dogmatise. Anyone who essays to speak in public requires a good voice as the working basis of technique. It is his duty to know how to use his voice effectively, and how to make it carry to the farthest ends of a room or hall without fatiguing himself and his audience by shouting. He must understand, too, how to drive home his points, where to pause, in what manner of ways it is possible to suggest movement, action. All these things can be learnt, but unfortunately there are some school lecturers who are inclined to think it is quite unnecessary to attend to such details. So long as they are sure of their facts, they consider themselves fully qualified to talk to "children"! One such slackly conscientious speaker can do incalculable damage to the whole cause of school lecturing. Should perverse fate select him as the first lecturer in a school just converted to the lecture idea, the principal will hardly feel inclined to make a second experiment. Even in cases where the lecture system has gained a foothold, I have heard principals say that a bad speaker always makes them feel as if they would never again risk subjecting their pupils, their staff, and themselves to an hour's positive torture.

We come now to the personality of the lecturer, which counts for very much in his work; it can infuse significance into a somewhat commonplace discourse, absolutely annul the finest sentiments, the most expert knowledge expressed in the best chosen literary phrases. It might be possible to sum up the psychological characteristics of the good speaker—sincerity, humanity, comprehension, at once they begin to enumerate themselves—but even so his personality would baffle complete analysis. His main power of success must spring from a secret source within him; only by force of what we vaguely call "temperament" can he get over the platform, in the same way that the good actor gets over the footlights, and grip his audience. So far as it is possible to put what I mean into words, I should say that a lecturer must have something of the dramatic instinct if he is to make his mark. But although everyone cannot wield magnetic influence over an audience, there are certain "tricks of the trade," by means of which every speaker can help himself to command attention. For instance, I have spoken of the technique of oratory which can materially assist him in this matter, and presently I shall have a few remarks to offer anent the technique of the lecture itself. But at the moment I want to give one example of a simple stratagem such as may often be resorted to when the lecturer sees an inattentive group among his audience. The device will be found particularly effective in the case of students, who naturally have a certain respect for discipline.

When two or three members of a school audience are discovered talking, laughing, and fidgeting, the lecturer should first look their way quite unconcernedly until he is able to make up his mind who is the ringleader of the party. Then let him fix his eyes straight on the chief offender and talk directly to him as though he were giving the lecture for his sole benefit. Presently the "culprit" will be sure to look up and catch the speaker's eye. As a rule it is not necessary to greet him with black looks; it is much better to go on talking for a few minutes as if with the special object of interesting him, and as a rule he will soon be seen sitting quite still at attention, while a sideway glance will reveal his erstwhile boon companions looking straight towards the platform, or silently taking notes.

In a more troublesome case it is a good plan to utilise a necessary pause in the lecture for bestowing on the guilty ones a very warning look. This or any other method of intimidation should be avoided if possible, but it is better for the lecturer to feel determined to go to the extreme of singling

out an offender for public reproof than to have his authority set at defiance.

When an entire audience is fidgety, it is invariably the lecturer who is to blame, but odd instances of inattention are apt to occur even when a good lecturer is dealing in an interesting way with an interesting subject. And there is a special reason why school lecturers should feel it incumbent on them to hold the attention of their entire audience. A very logical argument constantly raised against lectures as an educational medium is that they afford young people excellent opportunities for idling. The system of compelling students to take notes and afterwards to reproduce a summary of the lecture obviates against this to some extent, but a speaker should not need to depend on any such check to gain one iota of the whole attention he ought to command on his own merits.

Before turning our attention from lecturer to lecture, one further point must be emphasised. The lecturer who reads what he has to say is at a great disadvantage over the extemporary speaker. True, the written discourse stands to gain in the way of literary superiority, but a style that makes for the very best reading to oneself frequently loses much of its merit when applied to a composition that is to be read aloud as a speech. The written speech is very apt to give a feeling of straining after effect and to sound involved; moreover, there is always a false ring in an obviously prepared joke. It may appear flippant to mention the word "joke" in connection with a school lecture; my defence brings me to a consideration of the lecture itself.

Incidentally I have already suggested that the style of a lecture should be such as to infuse life into the spoken word. In the main, that covers the whole technique of composition so far as I propose herein discussing it, with the exception of two details, for it is hardly necessary to deal with such elementary essentials as grammar, divisions and subdivisions of treatment, or peroration.

One of the details I single out for special treatment is embodied in that word "joke" to which I have recently had occasion to refer. Many lecturers appear to think that a sense of humour is entirely out of place in a serious discourse. That is a very one-sided point of view. A sense of humour is never out of place, but it must not be confused with the making of puns and such-like futilities and vulgarities. Real wit may be the highest form of wisdom, and a lecture on the most serious topic will be far more effective if it presents some of its sagest thoughts in lighter vein than if it offers all its knowledge in ponderously serious form.

Secondly, the lecture should aim at presenting information as far as possible in the form of word pictures. Young people in particular find it much more interesting to see a thing than to hear about it, and words, if properly put together, can summon excellent pictures before the mind's eye. But why trouble to draw word pictures when a lecture can easily be illustrated by magic-lantern slides? it will be asked. The question raises another: Is the lantern lecture, with its dual equipment, essentially fitted to serve a more useful purpose than the unillustrated causerie? To avoid misunderstanding, let it be stated definitely that in any comparison of the two methods there is no intention of trying to dispraise the one in appraising the other. There are some lecturers who maintain that a darkened room handicaps them, and personal experience makes me inclined to uphold this point of view. Against such a theory there will naturally be advanced the fact that lights in the auditorium of a theatre would handicap the actor by dispelling illusion. After careful search for a logical explanation of what at first seemed conflicting truths in my mind, I have explained the situation satisfactorily to myself in this way: the actor as an artist has to play a part for his audience rather than to it; the lecturer must double with the *rôle* of artist that of thinker, and in the latter capacity it is more to his advantage to be able to see his audience and be able to talk to it, with it as it were. The lecturer who resorts to word pictures as his process of illustration usually takes infinite trouble to make them bioscopic, to give them movement, life, whereas the lantern lecturer is sometimes inclined to describe his slides on the label principle. In pointing out a little pitfall in the lantern lecture, it is not to be imagined that I accuse all lantern lecturers of falling into it. Indeed, it is only from those with a guilty conscience that I anticipate being myself accused of taking up a biassed attitude.

Finally, we come to the matter utilised in a lecture. There is generally so much to be said on a subject that a very careful selection of material must be made. Naturally this choice is guided to some great extent by the lecturer's intellectual bent and artistic outlook. But in making up his mind which of his copy to use, a lecturer should always take into consideration the nature of the part he has been invited to play on a school's behalf. If he has been asked to speak during school hours, his lecture may be an undisguised lesson, but if he is going to talk in recreation time he should endeavour skilfully to blend entertaining matter and instructive material so that the whole savours of recreation fare suitable for an intelligent audience. But in either case he has a duty which he must not shirk—he must leave his audience with something more to think about than before he addressed them, and leave them in a mood which persuades them to think.

The time has now arrived when all who are interested in educational matters must realise that the school curriculum, to be complete, must be a training for life, not merely for examinations. Among the many ways by which this broader aim can be achieved, the lecture, by reason of its direct and personal appeal, should gain and maintain a foremost place.

THE MOST POPULAR ENGLISH WORKS STUDIED IN SCHOOLS.

By G. R. Mitchell, B.A.
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DURING last session the Liverpool Branch of the English Association, on the initiative of its president, Prof. Oliver Elton, conducted an inquiry into the English teaching in the schools of Liverpool and district. The matter was taken up energetically both by the members and by many others interested in the English teaching of our schools. The report included a list of the books studied in the schools during the past two years. Such of itself does not seem very valuable or useful information, but when the complete list is before one it is surprising how much interest the English teacher may find in it. The following remarks are based on the books indicated in this list, and deal almost entirely with the secondary schools. The report has been printed and issued to members both by the English Association and also by the Liverpool Branch, but this short article may reach in The School World many English teachers who are unacquainted with the work of the Association.

As is fitting, Shakespeare is far and away the most popular author in the schools, for "A Midsummer Night's Dream," "The Merchant of Venice," and "As You Like It" appear among the books studied in the third form. These plays are supplemented by others in every other form. This, of course, involves much diversity of treatment, which was brought out fully in the section of the report dealing with method. In the third form (first year) the plays were read together with Lamb's "Tales," and parts, such as the trial scene in "The Merchant of Venice," were acted by the pupils in class, with the usual aids that delight and interest all at this age. In the upper forms single plays, as assigned for the various external examinations, were taken, "Henry V.," "Julius Caesar," "Macbeth," and "Richard II." being apparently the favourites.

An attempt to create the Elizabethan atmosphere may be noted. In several schools Hakluyt's "Voyages" were read avowedly for this purpose, and apparently with success. Apart from this, however, books like Hakluyt and "Adventures of Captain John Smith" are for their own sake always popular with boys, and more will be made of them than has hitherto been the case. Many excellent selections are now to be had of such literature, and certainly our language is probably richer than any other in literature of adventure and discovery. What a theme it is, too, from Hakluyt and Purchas down to Scott—the history of the making of our Empire! The stories of the Raleighs, the Gilberts, the Cooks, the Dampiers, and soon maybe of the Shackletons! Surely we have neglected these works too long. Would the Germans have kept them from their schools so long? It is a pity we cannot, for reasons of cost, occasionally experiment with a book of our own times. Captain Scott's "Voyage of the *Discovery*," though the author modestly protests his own lack of skill, is surely a great book quite apart from the absorbing interest of its subject. For the subject alone—and, after all, it is probably the subject that appeals to most of our pupils—Hakluyt and his like will certainly be read more frequently in the future. It is the subject, too, that enabled the writers, in many cases unschooled and unlettered sailors, to produce a collection which contains such an astonishing number of tales of literary excellence. Great deeds, high enterprises, and the like compel a man to write better than he knows, and hence, though in many cases these voyages and travels were put to paper by men little accustomed to the pen, their place amongst the classics is assured. There is another point connected with this class of book which is worth mentioning. Many English teachers have a rather unreasonable dislike for selections and abridged editions. How much good and wise editing can accomplish is easily to be seen in the case of these tales of travels. Remember the long-winded philosophical prefaces the editors have carefully omitted. Compare the original manuscript with the edited books, and note how the extravagances have been kept within bounds, and how so many irrelevances have been omitted. In much the same way much good has been done by such excellent series as the Oxford Press has published under the editorship of Mr. A. T. Quiller-Couch. Our pupils have been placed within reach of the excellences of Bunyan, Defoe, Crabbe, Cowper, and the like. How many of our boys would of their own accord open a volume of "Bunyan's Works" or "The Poems of Crabbe"?

In connection, too, with the Shakespearean reading frequent use was made of North's "Plutarch." The "Lives" are found to interest the pupils in many ways, the apparently quaint language being not the least attractive feature. If read before the play they may serve "to create an atmosphere," while, of course, they afford a valuable example in an informal way of contrast in style. The literary excellences, too, of the translation serve to increase the value of North as a school author. This is one of the many good things for which we have to thank the much-abused Local examinations; at any rate, both the Oxford and Cambridge authorities have done their share in providing good school editions of all kinds suitable for school reading.

Most grown-ups fancy Scott should be a popular author among schools, and generally recommend their children to read him. It is a fact, though, that our pupils find him ponderous. Perhaps we should do better with Scott if we could rid ourselves of our prejudice against abridged editions and selections, and if we introduced his books to the pupils without some of the portions they find tiresome. However, whatever be the reason, Scott does not appear very frequently in the list of books. With the exception of "The Talisman," Scott's novels are apparently

read only when prescribed by the Local examinations. They appear, however, in the lists of books recommended for home reading. Their place in schools is taken apparently by such stories as "Micah Clarke," "Treasure Island," "Cloister and the Hearth," "The White Company," and "Westward Ho!"—all of which appear in several lists. The "Lay," "The Lady of the Lake," and "Marmion" are, of course, found in many lists, and the ever-fresh Macaulay's "Lays." The last certainly seem the most popular subjects among the younger pupils; at any rate, along with such as "The Boy's Odyssey," "Heroes of Asgard," "Selections from Froissart," they are most widely read.

In the preparatory departments much is made of Kingsley's "Heroes," "Stories of King Arthur," "Tanglewood Tales," Stevenson's "Garden of Verse," and the like. The stories are read to, told to, and retold by the pupils, while in some cases they are reproduced by the children in verse, which gives much opportunity in a very informal way of introducing to the pupils many of the devices they will meet with and will use later in their own composition work. Particularly are they led to increase their vocabulary and to learn that one word will not always do as well as another similar one. It is in this preparatory stage, too, that a determined effort is being made to make the children familiar with the legends of Greece and Rome. How important this is every English teacher will appreciate, especially those of us who work in schools where the time given to Latin and Greek is now limited. Without this acquaintance with the allusions of which our English literature is full, we shall never reach the ideal text-book which shall contain as notes only a glossary of unusual and obsolete words. Fortunately, it is an easy and pleasurable task to the pupils, for it all deals with a world of ideas they delight in. In a similar way the Celtic and Norse mythologies, and the later Aytoun's "Ballads," are all mentioned in the list of books studied as being successful in every way. We may note, too, how at this stage the youngest delight in acting the parts of such characters as the Mad Hatter and the March Hare in "Alice in Wonderland."

In one or two lists some books are for various reasons marked as having been found unsuitable. "A Tale of Two Cities," "The Last of the Barons," "Harold," "The Ancient Mariner," and "The Discovery of Guiana" are all noted as having disappointed the teacher and apparently the pupils. A discussion of such books from time to time would yield quite as valuable information as one on suitable texts. At such a stage as the present in English teaching a free interchange of opinions is most desirable, and bold experiments are to be welcomed. The girls' schools show far and away the boldest attempts amongst us. While the masters in boys' schools seem content with Shakespeare, Macaulay, and perhaps Scott, we find the mistresses at work in many directions. "Sohrab and Rustum," "Pilgrim's Progress," "Cranford," "Vicar of Wakefield," and Wordsworth's "Prelude" are mentioned in several lists from girls' schools, while one school tried the "Golden Treasury," with Book I. for Form III., Book II. for Form IV., and so on! It would be interesting to know the result of this last experiment. Tennyson and Wordsworth have a small following among the boys, and apparently are only chosen when put down to be studied for examination. Of course, in the earlier stages, selections from these authors are learnt in the various verse collections used by many as repetition books, "Laureata" being apparently the favourite one in the Liverpool list.

Of other works not chosen for examination purposes, "Il Penseroso" and "L'Allegro" are the most popular of Milton's works studied, while Macaulay's "Essays" are met with in many of the lists as early as the fourth forms. Surely the "Coverley Papers" might with advantage be put on the list for forms lower than those of matriculation standard. They seem seldom to be read unless prescribed for examination, which is the very thing one would think calculated to ruin them. In the same way some earlier use might be made with a good fourth form at any rate of some Chaucer. The vocabulary difficulties are very small, and a moderate third-year form once read the "Prologue" with much interest and no little profit. The pupils found also much material which made the grammar lesson interesting, a lesson which hitherto they disliked, to say the least of it. In the same way a form took great interest in the linguistic subsidiaries of the "Faerie Queene."

Of the remaining books studied, the majority were those prescribed by the various examining bodies, and these are quite familiar to all English teachers, and the question of their popularity or suitability hardly comes within the scope of this article. Apart from these, however, "The Mail Coach," Boswell's "Tour to the Hebrides," and "Essays of Elia" appear in several lists as read for their own sake entirely. There are several lists for general reading indicated, the most popular authors being Bunyan, Lamb, Dickens, Scott, Kingsley, Lytton, C. Reade, Weyman, Doyle, and Stevenson—all prose works, be it noted. When the teacher has enough time to spare, it will be found useful to encourage the pupil to keep a list of the books read out of school from time to time. It will afford the teacher much surprising and valuable information, and he will wonder how so much miscellaneous reading is digested. A valuable aid to this will be found in giving each pupil a list of books which ought to be read. The earnest pupil may safely be left to omit those he does not fancy. Here is a list which has been made use of.

BOOKS YOU OUGHT TO BE READING.

FICTION.

Dickens, "David Copperfield," "Nicholas Nickleby," "Oliver Twist."

Scott, "Ivanhoe," "Waverley," "Kenilworth."

Goldsmith, "Vicar of Wakefield."

Brontë, "Jane Eyre."
Kingsley, "Water Babies," "Yeast," "Two Years Ago," "Hypatia."
Thackeray, "Vanity Fair," "Esmond."
Eliot, "Mill on the Floss," "Silas Marner," "Adam Bede."
Reade, "Cloister and the Hearth."
Meredith, "Shaving of Shagpat."

POETRY.
Palgrave, "Golden Treasury."
Shakespeare, The Plays.
Tennyson, "Idylls of the King."

ESSAYS.
Lamb, "Essays of Elia."
Addison, "Sir Roger de Coverley."
Drummond, "The Greatest Thing in the World."
Holmes, "Autocrat of the Breakfast Table."
Carlyle, "Heroes and Hero-Worship."
Emerson, "Essays."
Ruskin, "Sesame and Lilies."
Irving, "Sketch-Book."

The pupil's own list gives the teacher just the opportunity he wants to find out the particular turn or taste of his pupil. The teacher will soon have his advice asked in all sorts of directions. This appears to be one of the best ways in which our pupils can be put in the way of our modern works. One has found an older pupil reading Phillips, another of Socialistic tendencies bringing Shaw, Chesterton, Wells, and Belloc for interpretation and friendly discussion. Another has been discovered professing admiration for Meredith, and no doubt such has been the experience of many other English teachers. There is still another device which has been found useful, especially with older pupils. A short list of books which deal with the times and work of the author being read will be found very stimulating, provided care is taken that the books chosen are not too advanced in language or thought. In large towns, at any rate, no difficulty will be found in getting the books, for they will be found in the public libraries.

The remainder of the report deals chiefly with such details as method. Perhaps the most interesting part of this is the section which points out certain deficiencies of the methods practised. We are told that there is little mention of "the actual process of getting up the text." We are apt to forget that much of the work of Milton, say, is in a language as unknown and unfamiliar to our pupils as that of Euripides or Cicero. This probably will be admitted by most teachers, and it is so for various reasons which are well known. Want of time is, of course, one reason, but perhaps it is chiefly due to the fact that English teaching as such seems only just at its commencement in most schools. We have felt most strongly that our problem has been to start to create a real interest and pleasure in our subject which has been so long neglected, and getting up the text is associated in our minds with weary hours spent in textual criticism of some dozen lines of Vergil in the good old days. Still, it is a sound criticism that we should not shirk diction and its difficulties, and one which we may be trusted to bear in mind.

Attention is also directed to another defect in English teaching—the lack of any definite attempt to teach metre. An appeal is made to some teacher with plenty of spare time to provide an adequate handbook on the subject, and it is to be hoped one will be forthcoming. The report says: "The elements of metre should be taught not too mechanically, but at least so as to bring home some of the different moods and poetic purposes to which different metres may correspond."

There are also given in the report some of the methods used to elicit individual thought and intelligence from the pupil. These are particularly interesting; some are, of course, familiar to, and in use by, many of our English teachers, but, like the books studied, when gathered together they make very useful information, and they start to some of us new ideas and trends of thought. There seem methods, as it were, to meet all cases and to suit all tastes. The devices used depend almost entirely on the particular branch of the work which the teacher wishes to assist and develop. For rhetoric and composition, the pupil is encouraged to discriminate differences, to form opinions, this both by oral practice and by constant exercise in essay writing and paraphrasing. The logical analysis of complex sentences is insisted on to ensure good and expressive reading. Literary taste and style is encouraged and fostered by aiming at an original outlook. A scene of a play is to be written as a chapter of a novel; imaginary fables, autobiographies, original stories—all are found among the various suggestions; and even the scientific "heuristic" method is mentioned. Various out-of-school societies and activities are given, and, of course, visits to the theatres and the use of libraries both school and public.

These illustrate very forcibly the infinite possibilities of our subject in every direction, and also at the same time the difficulties which may beset the young teacher, especially in deciding whether this or that be the better method. From the articles which appear from time to time in THE SCHOOL WORLD, it will be seen how much is being done in this subject. These articles reveal the fact that English teachers are everywhere at work on problems similar to those mentioned in the report. It is to be hoped that these experiments will continue, for English literature is indeed a subject which, above all, cannot be treated by cut-and-dried methods. English teachers need constant variety of treatment, and much is to be gained by a free discussion of such experiments as are disclosed in the Liverpool report. This report will interest, if nothing more, all English teachers. The Liverpool branch has a few copies still left, and the secretary will be pleased to send one to any English teacher who may not have read it, or it can be obtained in the June *Bulletin of the English Association*.

THE TRUE FUNCTION OF A PUPIL-TEACHER CENTRE.[1]

By T. WHITEHEAD,
Principal, Bradford Pupil-teacher Centre.

THERE is to be noted a general tendency all along the line to increase the time for general education at the expense of the professional training, so that at last the centres have taken upon themselves the nature of secondary schools, with the natural consequence that the expense of maintaining two institutions of a similar type in one district has caused the transference of the centre to the secondary school. The inability of the secondary schools to work the concurrent system of study and practice in the schools, or the half-time system, has resulted in the introducion of the bursar and the student teacher. Thirty years ago practice was all-important and the general education neglected. To-day the academic training is a *sine qua non* and the professional training a nonentity. For this, I believe, we ourselves are largely responsible.

EFFECT OF SECONDARY SCHOOLS.—I think we are at one with the Board in recognition of the need for the higher scholastic training of the teachers, and we are in full sympathy with the requirement which demands a period of training in our secondary schools, especially as by maintenance scholarships such opportunities are open to all deserving candidates, but the time at which the student should leave the secondary school and the need for specialisation are debatable questions. An analysis of the time spent in the secondary schools, prior to entering the centre, of those who left the Bradford centre in July last gave the following startling results: five had been in the school for ten years, nine for nine years, eleven for seven years, and thirteen for six years; while none had spent less than three years, and there were only three in that group. More than 75 per cent. spent six years or more in the secondary school, giving an average of 6·6 years per student.

Surely this is a long enough preparation before one commences specialisation in what is to be one's life-work. A Blue-book[2] states that "pupil-teacher centres were established for the express purpose of bringing ill-equipped students up to the level of an external examination in the short time at their disposal." Now, this higher education before admission to the centre changes completely the old function of that institution, and we are compelled to ask ourselves: Is a centre now necessary? and if so, what are its true functions?

TWOFOLD FUNCTION OF CENTRE.—To me, the need for the centre is as important as at any previous stage of the centre movement, and even more so. But the functions of the centre need to be thoroughly understood and clearly defined. The function is twofold, comprising, in order of importance: (1) professional training; (2) academic training.

PROFESSIONAL TRAINING.—In this same Blue-book (p. 23) the Board states that "those best qualified to judge are of opinion that professional training can best be given at a later stage in a training college, as a supplement to, rather than as an integral part of, a general education"!

(*a*) Suppose there is no later stage in a training college. In Bradford, on an average, 80 per cent. of our students, either from choice or lack of means, do not seek to enter a training college. It would be interesting to know how this compares with other centres. Have four-fifths of our teachers to be deprived of all opportunity of professional training merely so that the remaining one-fifth may have its training deferred, or is the Board prepared to compel all to pass through a training college? Then most of our poorer pupils are debarred from entering the profession. Until such time as the Board is prepared to insist upon college training for all teachers, the centre has a distinct function in this direction.

(*b*) The student teachers may spend four days per week in teaching and one day in a secondary school, to keep in touch with their studies; but no attempt must be made to give direct instruction in school method. The same remark applies here as in the case of pupil teachers. Are these also to be deprived of all professional training if they do not enter a training college?

(*c*) We further disagree with the Board as to the divorce of the science and the art of teaching, and in particular at the commencement of the teacher's course. With such a separation his observation is a blind groping, and his attempts wasteful and discouraging. The subjects he is called upon to teach—penmanship, reading, the four rules of arithmetic, &c.—are not those which have been considered during his secondary-school course, but rather those learnt in early school life, before he was old enough either to analyse or to understand the principles underlying the rules. So remote is that period, that he is out of sympathetic touch with the difficulties, and, in fact, being without guidance in analysis of method, he oftentimes fails to see any difficulty at all and marvels at the stupidity of the class.

The Board states that "the system of concurrent instruction and employment is heavily weighted with disadvantages, and that it is only justified if it is of real value in founding practical training for future teachers." This, it states, is the reason for adopting it, and it is on this that it must stand or fall. To this we agree, and here we see the centre's true function as a co-factor with the school in the development of the embryo teacher.

The Board states that one difficulty in connection with professional training is "the want of agreement between theoretic methods of the pupil-teacher centre and practical methods actually used in schools" (surely this applies to the suggested college course). For this, however, the remedy is

[1] Extracts from a paper read before the National Federation of Teachers in Pupil-teacher Centres, on October 2nd, 1909.

[2] The Blue-book referred to in this paper is the General Report on the Instruction and Training of Pupil Teachers, 1903-7.

simple. The principal and normal mistress or master must be in close touch with the schools.

The following suggestions, which I submit for your consideration, have been introduced and successfully worked in one of our large centres:

(1) A class of children is brought from the neighbouring school, and each student so far as possible during the course must give a lesson which is afterwards criticised by his peers.

(2) Observation of lessons given by the normal mistress.

(3) Special course of lessons in school hygiene. Here, in addition to the ordinary course, the medical superintendent gave a course of twelve lectures with lantern, between April and July, to the second-year students.

(4) Special art courses in preparation of blackboard drawings and class illustration charts. These are intended not only to give ability but also facility.

(5) The course in needlework to embrace all the necessary work demanded by the school's syllabus.

(6) Visits to schools of a different type for purpose of broadening the outlook. For one week (again between April and July) all the pupil teachers were withdrawn from both school and centre and placed in groups of two and three in selected schools—in each case, however, of a different type from their own; *e.g.*, senior in junior or infant departments, or *vice versa*. No teaching was done, but for the week the headmistress of the school officiated as mistress of method. Most of the pupil teachers returned with an exercise book full of notes on observations made. None of this would be possible under the individual system, but collectively not only is it possible but highly appreciated.

Academic Training.—On this there is no need for me to give details. We are all agreed that academic training will make a good teacher a better teacher, but we are further *more* agreed that no amount of academic training can compensate for lack of professional training.

Age at Commencement of Pupil Teachership.—Intimately and indissolubly connected with the functioning of the centre is the age at which such a course of training should commence. By way of hypothesis, I say at the latest sixteen years.

(1) I have already pointed out that in Bradford only 20 per cent. on an average proceed to college; the remaining 80 per cent., eager to be fully fledged and on the wing, accept appointment as assistants at the earliest opportunity, and their only chance of further training is in certificate classes, held in the evenings and on Saturday mornings, where the time is so limited that only those subjects can be touched which are vital to the certificate examination. Or

Correspondence classes are joined—a course infinitely worse from the teacher-contact point of view. But in both cases all the studies have to be undertaken at the end of an exhausting struggle of five and a half hours with a class, to say nothing of the preparation of lessons necessary for teaching. It is evident, therefore, that the only opportunity possible for real training and for personal touch with the child under guidance necessarily comes before recognition, *i.e.*, between the years of sixteen and eighteen.

In the case of student teachers, the period of training would be after the age of seventeen years.

(2) I have submitted sixteen years as the latest, and that brings us to a discussion of the question from the psychological aspect. According to "the law of transitoriness of instincts," true education depends upon the recognition and appropriate exercise of the impulsive tendencies as they ripen. The psychological moment must be seized lest the impulse die out before habit is formed and skill is acquired. Applying this law to the period of adolescence, we recognise during the early years of this epoch of brain development the ripening of altruism. At this stage the youth, untroubled by the paralysing doubts that come in later years, will throw himself with enthusiastic zeal and buoyant confidence into the work of teaching, and the force of such youthful confidence and self-sacrificing zeal will enable him to overcome the initial difficulties of the work.

During this period, if ever, he will develop that interest which will vitalise for him what might otherwise be mere drudgery. All psychologists agree that this tendency appears more or less prominently in the early teens.

The study of the adolescent period is yet in its infancy, but without such study we shall neither reclaim the hooligan nor develop the teacher. I take it, therefore, that I am justified in placing the limit at sixteen years.

Summary.—The centre is not a secondary school, nor is it in competition with secondary schools, for while the function of one is purely academic, that of the other is largely professional.

Nor is it a training college, for its professional training is of a purely practical nature, suited only to a concurrent course of theory and practice, and it is introductory to, rather than a substitute for, such an institution. I have pointed out that economic considerations demand that this period of training should take place before recognition, and that, psychologically, it should begin in the early teens.

The ideal centre, fulfilling its true function, should allow opportunity for specialisation in the science and art of teaching. It should be an institution where child-nature may be studied in all its varied aspects—where the subjects taught in the schools may be thoroughly analysed, and where every phase of school life may be brought under review. During this period the teacher should pass through the whole gamut of school experience, from the infant to the senior scholar, and the relation between the centre and the school should be closely intimate.

The principal of the centre should be in vital touch with the head teacher in the school, and the two conjointly, and not apart, should seek the welfare of the embryo teacher.

The teacher, on leaving the centre, will have been taught how to observe, and whether he is fortunate in securing further training in college or less fortunate in having to join the list of acting teachers, he will have secured a knowledge of the fundamental principles of his profession and a grip of the work.

I am afraid that my suggestions will not be applicable to rural areas, but in concentrated areas, as in our towns and cities, it is imperative that the Federation and all who are interested in the teaching profession should see to it that the opportunities which pupil-teacher centres offer are not filched away. "Not death, but a larger and truer life."

CONTINUATION SCHOOLS.[1]

THIS report is one of the most important documents relating to English education that has been issued in recent years; it has been drawn up with care and thought, and the conclusions arrived at are the result of a careful consideration of evidence covering a wide field of educational experience. It is a much more thorough and valuable discussion of educational problems than the previous report on higher elementary schools issued by the committee, and it will form the basis of all further attempts to deal with the problem.

The report opens by giving a very clear statement of the extent of the problem. The committee, for the purpose of the report, confines itself mainly to the question as it concerns boys and girls before they reach their seventeenth birthday, but refers briefly to the problem as affecting older pupils and workers.

It is pointed out that at present about three-fifths of the population of England and Wales live in areas where no child under fourteen years of age is released wholly from school attendance before reaching the seventh standard; it is estimated that 211,000 children of school age have obtained full-time exemption from school attendance, and that there are rather more than 2,000,000 boys and girls between fourteen and seventeen years of age, of whom three-quarters are at present, on week-days at any rate, under no educational care.

The need for educational care and discipline during these critical years of adolescence is shown very clearly; the changing conditions of industry have brought about a state of affairs in which the boy and girl released from school are also released from all educational and disciplinary control to an extent that was not the case under the old conditions of apprenticeship. The great majority are left entirely without physical training after they leave the day school, and a tendency has arisen to exploit the labour of adolescents in such a way as to create an unemployable class.

In connection with the latter problem, a very valuable memorandum by Mr. Tawney, lecturer in economics in the University of Glasgow, is printed as an appendix to the report. In it he points out that apprenticeship by itself does not give a training which fits boys for modern industrial conditions, as it begins too late, and leaves them during the critical years between fourteen and sixteen without any serious occupation; it confines them to too narrow a range of work, and it affords no sufficient mental or moral discipline. The case of boys who are not apprentices is far worse; they are probably the most neglected class in the community; their parents look upon them for the most part as wage-earning machines, and directly they require more than a boy's wage they are thrown out of employment. The report of the Poor Law Commission is quoted in regard to this, and it is to be hoped that the eyes of the nation are being at last opened to the seriousness of the problem, and that some effective steps will be taken to remedy the evil before it is too late.

The committee lays down as necessary reforms: (i) an improvement in the conditions of the day school so as to ensure more efficient training; (ii) reforms in the conditions of employment during adolescence; (iii) that the education of young persons, instead of ceasing when they begin work, should be continued until they can better appreciate its value for themselves. Great as the work done by the day schools since 1870 has been, it is an undoubted fact that compulsory education has not done all that was hoped. Classes are far too large: this leads to too great a stress being laid upon mechanical discipline, and it is impossible for teachers to deal with pupils as individuals. The curriculum is inappropriate: in too many cases there is little or no contact between it and the daily life of the children at home and after leaving school; at school the child talks a different language and lives in an entirely different world from that of his home; the curriculum assumes a background that is not present in the child's own home surroundings. The necessity of introducing more constructive work into the curriculum is urged strongly, and it is pointed out that if the school age is to be extended so as to cover the years from fourteen to seventeen, it is absolutely essential that a large amount of manual work should be introduced. The gradual raising of the school age and the abolition of half-time are given as the necessary basis of a sound continuation-school system; half-time has already been abolished in Scotland, in London, and in other parts of England and Wales, and opinion is ripening for its general abolition.

As regards the waste due to the conditions of employment during adolescence, the committee feels strongly the necessity of finding means to prevent it. A very striking paragraph is quoted from the 1908 report of the Borstal Association: "When a boy leaves school, the hands of organisation and compulsion are lifted from his shoulders. If he is the son of very poor parents,

[1] "Continuation Schools." Report of the Consultative Committee. (Cd. 4757.) 324+xxvii pp. (Wyman.) 1s. 6d.

his father has no influence, nor, indeed, a spare hour, to find work for him; he must find it for himself. Generally he does find a job, and if it does not land him in a dead alley at eighteen, he is fortunate; or he drifts, and the tidy scholar soon becomes a ragged and defiant corner loafer."

This state of affairs is due partly to the ignorance of parents as to the future prospects of employments, and partly to the need of some organisation for finding suitable employment for children on leaving school. Teachers, managers, and apprenticeship committees do what they can, but more systematic organisation is needed in each district. It is further recommended that children should not be allowed to cease to attend school until they reach the age of sixteen, unless proper occupation is found for them. At present too many leave school the very day they attain the exemption age, and loaf about for months, with disastrous results to character and to morals; this waste could be stopped without involving hardships to anyone concerned.

A very interesting historical account is given of the origin and growth of evening and other continuation schools in England and Wales. Full justice is done to the work of the adult schools, which had their origin between twenty and thirty years ago in Birmingham, and have recently been rapidly increasing in number; the spirit which animates them is justly compared to that which has made the *Folkehöjskoler* so great a power in Denmark. The efforts made by local authorities to encourage attendance at evening schools, and to interest employers in them, are noticed very fully. A surprisingly large amount of such work has been done during the past few years, with fair success. Employers also are awaking to the necessity of giving educational facilities to their adolescent workers, and a very full account is given of what has been done by the Post Office and other Government Departments employing boy labour.

Reference is also made to the movement for the establishment of trade schools, and the interesting fact is pointed out that the trade school is really the form of elementary school native to England, and that it is only by a series of occurrences almost accidental in character that it failed to become the dominant type, and that industrial training became associated with schools of a penal character, attendance at which involved the idea of disgrace.

Various methods of securing a larger attendance under voluntary conditions are discussed; the schools must provide for six main groups of pupils—those engaged in (i) skilled trades, (ii) shops and offices, (iii) unskilled occupations, (iv) domestic occupations (girls), (v) rural occupations, and (vi) adults. Each class needs special provision; (i) and (ii) are fairly well covered at present; the remainder need to be dealt with. The provision for (v) is very fully discussed, and those interested in rural education will find chapter xii. and appendix B of the report well worth a careful study. Boys in unskilled occupations need to be dealt with largely by boys' clubs with a definite educational side attached, and there is room for a type of evening school that will do for girls under seventeen what the polytechnics do for those above that age.

The committee points out that the local authority can, in addition to raising the standard of exemption and improving the day-school curriculum, do much to render the evening schools more efficient by co-operation with teachers, employers, and workpeople. At the same time, the difficulties of a purely voluntary system are clearly seen: local opinion is apathetic: employers do not as a whole take any interest in the schools; and, above all, the fact has to be faced that, with the present hours of labour, children are too fatigued to benefit by school work after hours. Compulsion in some form is inevitable if the work is to be efficient, and there is a distinct growth in public opinion favourable to it. Other countries have found it possible, and full particulars of what has been effected in Germany and Switzerland are given.

The difficulties to be faced in England and Wales are not insuperable. Educational difficulties may be put on one side as quite solvable; economic difficulties are more serious. The only satisfactory solution is that with which the name of Mr. Sidney Webb is connected: a reduction in the hours of labour for adolescents, with a corresponding obligation to attend continuation schools held in the daytime. This is, after all, merely an extension of the existing factory law, and when public opinion is ripe the reform must come. The committee favours local action rather than national, as local bye-laws can be so framed as to cause the least disturbance to local industries.

The financial question is not lost sight of. It is estimated that about half a million will be required to raise the leaving age to fourteen years. Of this, under existing conditions, about one-third will fall on local rates and two-thirds on the nation at large. The institution of compulsory continuation schools is a much bigger thing, and will cost over two and a half millions, though this figure is not likely to be reached for some years. After all, this is but a small price to pay for so all-important an advance—the price of two battleships, but giving an immense return in national efficiency. If the nation really realised the value of education, the money would be found cheerfully, for its future welfare depends upon nothing so much as the careful training of its younger members between the time when they leave school and take upon themselves the full responsibilities of citizenship. Wise expenditure upon this object is the best form of expenditure for national defence.

We commend this report to all readers of The School World, and advise them to obtain it, to study it carefully, and to use all their influence to cause its recommendations to be carried into effect.

PERSONAL PARAGRAPHS.

IN connection with persons who would naturally be mentioned in these paragraphs, two subjects come well above the horizon this month —the study of mathematics at Glasgow University, and reform in secondary education.

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MR. HUGH BLACKBURN, emeritus professor of mathematics at Glasgow, who died early in October, was educated at Eton and Trinity College, Cambridge. He was fifth wrangler in Lord Kelvin's year, and was elected to a fellowship at Trinity in 1846. Prof. James Thomson, Lord Kelvin's father, having died, Blackburn was induced to stand for the chair, and was appointed, entering on his duties in 1849. He occupied the chair for thirty years. During this time he wrote a valuable treatise on trigonometry, and co-operated with Lord Kelvin (his colleague as professor of natural philosophy at Glasgow) in an edition of Newton's "Principia." He took an active part in the business of the University, but after his resignation in 1879 lived in complete retirement.

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PROF. BLACKBURN was succeeded by Prof. Jack, who has in his turn recently retired, to be succeeded by Dr. G. A. Gibson, who was one of thirteen applicants for this valuable appointment. Prof. Gibson—I quote from *Nature*—has published a number of original contributions of importance to mathematical science, and is the author of works on the calculus which are acknowledged to be among the best in the English language. His wide knowledge of the history and present state of mathematical science, unusual powers of logical and lucid exposition, and ability as a creative scholar, ensure enthusiasm for mathematical studies at the University and increased activity in scientific investigation. It may be mentioned that Prof. Gibson has for several years been a contributor to THE SCHOOL WORLD. His two predecessors having held the chair for thirty years each, it may be hoped that Prof. Gibson may carry the occupancy of the trio to the total of four score years and ten.

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IN a paragraph in the July issue of THE SCHOOL WORLD dealing with Mr. A. Devine's proposals for reform in secondary education, I mentioned that the headmasters of Eton and Winchester were engaged on a book on a rational curriculum for secondary-school boys. The volume has now been published by Messrs. Longmans, though Dr. Burge has apparently resigned his share of the authorship to Mr. Lyttelton. Dr. Burge's views, however, are understood to coincide with those of the actual author. It is not my business here to review the book, but readers of Mr. Lyttelton's previous contributions to educational literature will know that they can confidently look in its pages for vigorous and trenchant criticism, close reasoning, and something tangible by way of suggestions for reform. What the headmaster of Eton writes may help to clear the way for the next discussions of the Headmasters' Conference, which is pledged to deal with the question so far as preparatory schools are concerned.

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THE headmaster of Eton was slightly forestalled by the publication of a more ambitious work by Messrs. Cyril Norwood and Arthur H. Hope, "The Higher Education of Boys in England" (Murray). After tracing the history of secondary education in England since the Tudor period, and delivering judgment upon it in a strain which is anything but optimistic, the authors point out, as the two great defects existing to-day, lack of capable and well-paid teachers, and the want of expert knowledge in administration. The remedy they point to is an extension of public control. This, they hold, would tend to bring to an end a state of affairs under which we still grossly underpay our masters and put obstacles in the way of their professional recognition. We make a great mistake in offering, instead of enforcing inspection. They lay their finger, too, on the obvious blot in elementary education, which is the local parcimony which "allows classes of sixty or seventy to be rather the rule than the shameful exception." They urge the adoption in England, as in Germany, of a compulsory system of continuation schools. If we take into consideration the most salient feature of the whole educational landscape, namely, the complete indifference of the public, we shall be inclined to give our authors a respectful hearing when they argue that our only guide out of this *impasse* is the State. They plump for a reformed central authority capable of guiding and inspiring the teachers without reducing them to machines. The book is none the worse for the Utopian touch in it.

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THE REV. CHARLES G. HARVEY, rector of Peper Harrow, near Godalming, recently died at the age of eighty-five. He was a scholar of St. John's, Cambridge, and graduated as a senior optime in Todhunter's year (1848). Appointed to a mathematical mastership at Rossall in 1852, he served there for sixteen years.

ONLOOKER.

The Function of Words. A Guide to Analysis and Parsing. By M. C. Carman. xiii + 158 pp. (Longmans.) 1*s.* 6*d.*—The new edition of this book, formerly published by Messrs. Swan Sonnenschein and Co., Ltd., is intended for those who have mastered already the rudiments of grammar. The writer's profession of faith and, incidentally, his method are well illustrated by a sentence in the preface: "If a boy can parse and analyse with accuracy, he will know the main rules of grammar; and this should be the attainment of everyone, whether he proceeds to further studies in grammar or not." For our own part we feel that the enunciation of definitions with a modicum of illustration is not the ideal way of initiating young pupils into the abstractions of language, especially when some of the definitions are of this kind: "an article is a word used to precede a noun."

CURRENTS OF EDUCATIONAL THOUGHT.

THE story of the common school is full of illustrations of the close connection between current religious and philosophical thought and the daily routine of schoolboys. Schools are abreast of or are behind the times in so far as they reflect the spirit of the age. This was probably truer in past times than it is to-day, when the machinery of education has become so huge that we are tempted to give all our thought to the smoothness of its working, and, at the same time, to resist friction-bringing change. Yet is not the machine itself characteristic of a time in which schemes of social organisation and the accompanying bureaucracies grow ever wider in their scope? In education we may not regret the State's advance, but in the freezing atmosphere of official regulations, schoolmasters will need to go more than ever for personal inspiration to the history of their profession. Even the work of the much-maligned schools and schoolmasters of the mediæval period will stimulate thought, for, in spite of the narrowness of their outlook, there was individuality and life in them.[1] The story was worth the time and attention which Dr. Anderson has recently given to it. Ordinarily, the subject is dismissed with a rather vague account of "trivialities," but he takes us to the schools and shows us how the boys studied their texts and did their sums. We feel that we are really touching ground, and our respect for the teachers of those days is greatly increased by the concrete and intimate picture of them which the author gives.

On the other hand, he is less successful in his treatment of the modern period, though he is careful to bring his work into line with the general trend of thought. Bacon and Darwin must in such a treatment find an adequate place. The historian of the twentieth-century school will find his chief concern in tracing the changes brought about by the idea of evolution which has now entered into the fibre of our thought.

Much in the immediate future depends upon the extent to which the schoolmaster preserves his freedom. There is already a sense of danger abroad. The Board of Education is strongly impregnated with ideas "made in Germany," and is issuing "suggestions" on professional questions for the consideration of teachers, which may steadily crystallise into "instructions" comparable to that formidable collection of official instruments concerning the higher schools of Prussia—six hundred closely printed pages dealing with all the minutiæ of school-keeping, from the number of hours per week to be given to each subject of the curriculum to the exact procedure to be followed in case of a pupil's suicide! The volume is one to give pause to the uncritical admiration which German education so often meets in this country.[2]

Nevertheless, the successful organisation of the higher education of boys in Germany and elsewhere by the State has led many keen schoolmasters, weary of the struggle for reforms which come so slowly, to sigh for the day when the schools and their curricula shall have been wholly accepted as the business of the nation.[1] They hope then that the best-informed opinion may become "immediately effective throughout the country," and that improvements in education may be carried out "with the promptness and precision that we are accustomed to witness when naval or military improvements are concerned."

Few of the discontents amongst us—and let us hope they are many—would express themselves quite so frankly as this. Probably most of them would feel some alarm at the thought of the promptness and precision of a military despotism being introduced into the government of the schools. The gentlemen who thus frankly lay their cards on the table have not had a difficult task in arraigning the management of our higher schools, but the precision of the bureaucratic despot is not an attractive substitute. Even in matters of pure organisation, the theory and practice of local government in this country would make the task of a central bureaucracy no easy one, and, though the despot might improve school curricula more rapidly than the Headmasters' Conference, what of the headmasters and their education? Is there anything more destructive of personality than official control which at once relieves from responsibility and puts a damper on initiative? It is not that the new apostles of State action overlook the question. They do not admit the danger to the schoolmasters' freedom which is involved in the creation of an authority having the power to effect reforms with soldierly promptness and precision.

Even those who disagree *toto coelo* with the conclusions of the writers will find their book a stimulating and useful one. It covers too wide a field to be adequate in any direction, but it is a welcome introduction to many of the problems that vex the spirit of the schoolmaster. The chapters on the teaching of specific subjects are so short as to be of little use, except in the one case in which a bibliography is added. With the advent of compulsory professional training, we may hope to see adequate practical treatises by recognised experts, instead of the short ten or twelve page article which is usually little more than a statement of what the teacher's university qualifications ought to be, and what results he should expect to get from his pupils. The highest professional qualifications and the achievements of the brightest pupils are recorded, to the confusion of the humble general practitioner, who is depressed by his own shortcomings, and whose pupils are small boys of quite ordinary calibre.

The sort of book we have in mind is admirably

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1 "History of Common School Education. An Outline Sketch." By L. F. Anderson. (Bell.) 6s.

2 *V.* "Die höheren Schulen in Preussen und ihre Lehrer." Sammlung der wichtigsten, hierauf bezüglichen Gesetze, Verordnungen, Verfügungen und Erlasse nach amtlichen Quellen. Herausgegeben von A. Beier.

1 "Higher Education of Boys in England." By C. Norwood and Arthur H. Hope, with twenty-two special contributors. (Murray.) 12s. net.

exemplified in a recent American book.[1] It concerns the art of keeping children busily at work. The authors are primary-school teachers, and they write for their primary-school colleagues. It is not, therefore, the subject-matter so much as the manner of the book that commends itself to notice. It is a genuine chip from the workshop, telling us what the authors did and how they did it. Work of the kind will be still more useful to the student and practitioner when it is thought worth while to note and to put on record the actual response of the class to the exercises set. When we adopt the laboratory method of recording class-room facts we shall be within measurable distance of the scientific treatment of teaching practice.

This sort of record is not difficult so long as we are concerned with the departmental work of the school—the history master and the English master can help us in this way with their subjects. It is another matter when we desire to sum up the total influence of the school—its grand moral effect upon individual pupils. This is the keystone of the educational arch, the nature of which is determined by the details of the whole underlying structure. A treatment of moral education which does not keep the whole school in view must therefore be incomplete, and the title of a recent book[2] at once challenges criticism by its actual contents. "Moral Training through School Discipline" awakens the expectation of subsequent books on moral education through school traditions, school pictures, and perhaps, finally, through school lessons. No doubt the authors chose the title to bring out a particular point of view—perhaps to differentiate themselves from the Herbartians, and their book from the publications of the Moral Instruction League. Nevertheless, their brightly written treatise suffers a little from the adoption of a partial line of approach. They do actually leave class-room work relatively in the background. There is much sound writing on the rubrics of class management, but they touch too slightly on the moral value of the content of school studies. There is a chapter on stimulus and restraint, which is given wholly to the consideration of marks, promotions, types of punishment, &c. Not a word is said of the stimulus of example, of suggestion, of social service, or of the stimulus that may come from reading. The subtler factors constitute the finer moral agency, and adolescence is the sensitive period *par excellence*. It is true that some of these subtler influences are touched on in other parts of the book, but the whole presentation of the problem suffers by the conventional order of treatment adopted by the writers. Their book is frankly conservative, and, as such, it fairly represents the best of current accepted English thought upon its subject. It breaks no new ground, but reviews the old in an interesting and attractive way. The more strictly ethical chapters are clear and lucid, as one would expect from the reputation of the writers. Their conservative attitude has, however, led them to ignore the experimental and pioneer work which is beginning to make an impression on current educational thought.

[1] "Teaching Children to Study. The Group System Applied." By Olive M. Jones, E. G. Leary, and A. E. Quish. (Macmillan.) 3s. 6d. net.
[2] "Moral Training through School Discipline." By Prof. J. Welton and F. G. Blandford. (Clive.) 3s. 6d.

THE ANNALS OF TACITUS.[1]

SCHOLARS will welcome the completion of Mr. Ramsay's translation of the Annals of Tacitus. It is, indeed, more than a translation; and we shall be much deceived if it be not accepted as no less important for students than a new edition of the text. For amongst the numerous notes are a number that deal with textual questions; in a dozen or more places Mr. Ramsay successfully defends the Medicean against editors' alterations, and in others he discusses their readings. He also fills up gaps, as on pp. 47 and 101. His explanatory notes are also more than aids to the reader who knows no Latin. He discusses geography and military operations, persons and criticisms of their acts and motives, and compares the accounts of Tacitus with those of Suetonius and other authorities. Archæological notes (such as that on p. 81[4]) contain more than is given in the common books of antiquities. But most useful are the notes, and they are many, that explain the meaning of the text; and in particular, Mr. Ramsay is skilful to unravel the threads in complicated expressions. It is often clear that Tacitus is compressing two or more distinct thoughts into one sentence, or suppresses something which is essential to the understanding of his tale: in such cases it is a great help to read the notes, examples of which are found on pp. 38[2], 40[3], 79[2]. The editor's references to modern politics, and the lessons he draws from them, are profitable indeed, if we could suppose that our rulers would ever condescend to learn from history (*e.g.*, 91[1], 91[4], 154[1]).

The introduction, of nearly a hundred pages, is full of fresh and attractive ideas. Such topics as the state of the Roman world, and Tacitus's neglect of military strategy, have been treated by others; but even here Mr. Ramsay has new illustrations to bring from his reading. The art of translation is not a new theme, but his instances are both unhackneyed and illuminating. But in the treatment of Tacitus's grammar and style, there is much that is new to us, and all is written with a zest and vigour that charms. The parallel of Tacitus with Thucydides, and the contrast of their places in the history of prose, is particularly well done. We can only admire: except that it does seem as if Mr. Ramsay's affection for his author has blinded him to the author's habit of finding a base motive for every act. If this habit is consistent with μεγαλοψυχία, this ought

[1] "The Annals of Tacitus, XI.–XVI." An English translation, with introduction, notes, and maps, by G. G. Ramsay. xcvi+358 pp. (Murray.) 15s. net.

to be proved, for it is certainly the clearest mark of μικροψυχία in the mean. We note, by the way, that the few Greek words used are printed with several mistakes (pp. lv, lvi), and that on p. lxxiii "one" stands for "our."

The translation is excellent. We had the duty of reviewing the first volume, and that gave us pleasure; but we think the second is better still. We have read it without a moment's qualm; there seems to be no trace of "translator's English," and nothing we have seen could possibly strike the English reader as awkward or ungraceful. In fact, the only phrase we have noted that offends is in the introduction (p. xxxiii), where Mr. Ramsay speaks of the text as "so unique." We think that this will unquestionably be the standard translation of the Annals, and we hope it may be published in a cheaper form.

OLD ENGLISH GRAMMAR SCHOOLS.[1]

THIS is an excellent compilation, but a poor book. It is indispensable to the student of education; for it gathers from the four winds masses of information, numbers of documents, from which a picture of the old schools can be made, and without which it cannot; but the style is arid, and there lacks the touch of imagination which could set these schools before us. The great merit of the book is that it quotes the actual words of ancient school statutes, and of the various authorities who have written on the subject; these will give it a permanent value, and we do not wish to detract from it. On the contrary, we repeat it is in this matter quite excellent; indeed there is nothing to compete with it.

The range of subjects may be seen from a few of the chapter headings: religion in the schools, 1500–1600; logic and disputations; manners and morals; elementary instruction; reading, writing, music; grammar; speaking of Latin; translation, dictionaries; rhetoric; the school oration; verse-making; Greek, Hebrew. Few schoolmasters could be found who would not learn something useful from some of these; and the best of us might perpend. What place does music take in the modern school? and should we not be ashamed to think how it made life beautiful in the old days that so many despise? The drama, once equally potent, has been almost omitted from the book, we do not see why: may we hope that Mr. Watson will give us that in a second volume?

The author does right to say that one of the greatest needs of the modern school is an attempt to restore the old courteous manners (p. 104). On the matters of colloquy, and even translation, we can learn much from our predecessors. The modern slavery to grammar and its satellites is far from the ancient ideal; as Sir Thomas Elyot says, too much of it makes the sparks of fervent desire for learning extinct, like as a little fire is soon quenched with a great heap of small sticks. Comenius and his followers were far in advance of modern school systems: we recommend readers to hear the pleasant tale, how Hezekiah Woodward taught Latin to his child (p. 292): it is the "direct method," as often rediscovered by inquirers, as they examine facts without prejudice.

It is impossible in our space to do justice to the subjects treated in this book; and we must content ourselves finally by recommending it to every student and schoolmaster. It is a hopeful sign that so many books on the history of education are being published: there must be readers for them. We hope that as members of our profession realise its difficulty, and how easily teaching may become bad, they will more and more inquire what others have done, ready to learn from all that which is good.

[1] "The English Grammar Schools to 1660: their Curriculum and Practice." By Prof. Foster Watson. x+548 pp. (Cambridge University Press.) 6s. net.

TWO BOOKS ON BIOLOGY.[1]

THE recently published volume of the "Cambridge Natural History," though fourth in proper order, is the last to appear of the ten volumes which compose the now completed work. The delay has been caused chiefly by the death of Prof. W. F. R. Weldon, who had made himself responsible for the section dealing with the Crustacea. One chapter he left ready for publication; the remainder were entrusted to the capable hands of Mr. Geoffrey Smith.

As is almost inevitable in a work to which many writers contribute, the several groups of animals do not meet with uniform treatment. Thus in Mr. Shipley's article on *Limulus*, and in Mr. Warburton's on the Spiders and their allies, considerable attention is given to habits, life-histories, and economic considerations, whereas in other portions of the volume systematic classification and general morphological questions are dominant. In this latter connection it may be pointed out that the arguments by which Mr. G. Smith supports the primitive character of the bi-ramous crustacean appendage can with equal cogency be applied in reversed order to maintain that the foliaceous appendage is nearer to the ancestral type. Moreover, we are surprised that he makes no allusion to the structure of the parapodia of polychæte worms, and to the homologies that may exist between these and the crustacean limbs. The paragraphs on the compound eyes and their mode of vision are excellent, and their different effect upon the rays of light entering them, according as illumination is brilliant or dim, is admirably explained. Chapter vii., dealing with the distribution of marine and fresh-water crustacea, is a most inspiring bit of zoological writing. To the non-zoological it

[1] "Crustacea and Arachnids." By Geoffrey Smith, A. E. Shipley, C. Warburton, and others. Cambridge Natural History, vol. iv. (Macmillan.) 17s.

"Recent Progress in the Study of Variation, Heredity, and Evolution." By R. H. Lock. Second edition. (Murray.) 5s. net.

must appear almost miraculous that "the distribution of the fresh-water crustacea in the temperate southern hemisphere affords strong evidence in favour of the view that the chief land-masses of this hemisphere . . . were at no very remote epoch connected"; that, in short, the study of fresh-water shrimps can enable us to rebuild in imagination the ancient geographical outlines of the earth, and to speak with confidence of a lost Antarctic continent. Yet it is such possibilities that make biological studies so fascinating to their devotees.

To the general reader with no special knowledge of zoology we would recommend chapter xiv., in which is given a most delightful account of the early life and general behaviour of spiders; of their mode of spinning their very varied webs; of the formation of gossamer; of the mimicry and protective (aggressively) colouring, and of a host of other interesting facts in the life of these animals with which everybody has at least some acquaintance. The last chapter of the book is devoted to those weird animals the Pycnogonids, or sea-spiders, known perhaps to but few, but abundant enough in the shore pools of our coasts. The editors, Messrs. Shipley and Harmer, are heartily to be congratulated on the completion of their great task begun some sixteen years ago; to them the gratitude of all working zoologists is due.

The second edition of Mr. Lock's book on heredity and variation differs from the first, which is already well known, in containing a short, representative bibliography at the end of each chapter; and in introducing expansions and slight modifications of topics and statements in several chapters. An entirely new chapter (x.) on eugenics has been added, in which the work of Francis Galton and Karl Pearson receives recognition and criticism. It is certainly well that the application of biological laws to man should be clearly pointed out, and the value of the statistical method of inquiry duly appraised.

SECONDARY EDUCATION IN SCOTLAND.

THE report by Dr. Struthers on Secondary Education in Scotland contains an abundance of interesting material for the student of educational progress. It affords evidence that Scottish education is marching surely and steadily towards greater perfection of organisation. For years the Department has been striving after a scientific organisation of its schools, but serious financial difficulties have hindered the full attainment of its ideal. The Education Act of 1908, by placing ample funds at the disposal of the Department and the Committee on Secondary Education, promises to remove the main defects in the school system, and to regain for Scotland its old time pre-eminence in the world of education, so far at least as mere machinery can effect that.

The cost of maintaining efficient centres of higher education has in the past fallen upon a comparatively limited area, but by the new Act a more equitable distribution of the financial burdens has been secured. In future there should be, therefore, no difficulty in maintaining all over the country a sufficient number of well-equipped and well-staffed centres of higher instruction. In addition, the funds now available permit of the institution of a properly articulated bursary system, which will bring the opportunities for higher education within the reach of every promising child.

In the inner organisation of the schools considerable changes are foreshadowed, but happily all of them are in the direction of making the curriculum more elastic and less oppressive. The experience gained by the Department in awarding intermediate certificates in active co-operation with the responsible teachers has proved so satisfactory that it has been resolved to apply the same principle in the award of leaving certificates. The responsibility for the passing and failing of candidates is no longer to rest entirely with the outside examiner. The teacher is to be called in as an assessor, and his reasoned verdict is to be a factor in the final judgment. At the same time it must be admitted that such a system is not without its dangers, and it is satisfactory to find that the Education Department is on its guard against them. The difficulty of fixing, and still more of applying, a uniform standard of efficiency for each subject seems almost an insuperable one. The report, as might be expected, indicates that in many instances the teacher's verdict has not been borne out by the written test, and pupils marked "good" and "very good" by their teachers have had to be rejected by the external examiners. Indeed, it is evident from the experience obtained both here and in America that the strong guiding hand of a central authority is required to keep the new system of examination from drifting into absolute chaos.

Dealing with the results of the higher examinations, Dr. Struthers notes a gratifying advance. The total number of full leaving certificates gained this year was 979, as against 904 last year and 733 in 1907. In the case of the intermediate certificates a small increase in the number of presentations has been accompanied by a small decrease in the number of passes. This is attributed partly to the premature presentation of pupils and partly to the overburdened curriculum of certain schools. In this connection exception is taken to the attempt to study two foreign languages simultaneously during the intermediate stage. Teachers will readily agree in deprecating the attempt in the case of a considerable proportion, probably a majority of the pupils, but they are also agreed that many pupils can with profit and without any over-pressure do so. The Department should not have regard merely to the interests of mediocrity. The clever pupil has his rights as well as the slow pupil.

Regret is once more expressed at the steady decline in the study of Greek and German, but in regard to German at least the Department has

the remedy in its own hands. A relaxation of the rigidity of the intermediate curriculum would at once restore German to its rightful place in the secondary-school curriculum. No change in the regulations, however, is likely to bring about any revival in the study of Greek. When the things of the mind take their proper position once more in regard to the things of sense, Greek will come into its own again, but not until then. But while Greek has been killed by the modern spirit, commercial subjects, strange to say, have not flourished under it. According to Dr. Struthers, "interest in the teaching of commercial subjects continues to flicker but feebly," and he looks for no improvement until the leaders of commerce have awakened to the need for directing their business on scientific lines and with thoroughly equipped agents.

The following extracts from the report should prove of value to all teachers of the respective subjects.

ENGLISH.—Speaking generally, it may be said that the work has now been placed on very good lines, and that consequently in most cases satisfactory progress can be recorded. In the larger centres, at least, specialist teachers are employed. . . . In the schemes of reading, poetry continues to bulk more largely than prose. In some schools, indeed, prose is scarcely adequately represented, particularly at the intermediate stage. Even where a reasonable quantity of it is professed, the selection is too often confined to the novel, which, though an essential element in every well-planned English course, does not lend itself to the minute and laborious study to which it is sometimes subjected. It is more in place in the lists of books drawn up for home reading. There, as a matter of fact, fiction largely predominates. This, perhaps, is not entirely as it should be; but, at any rate, there is the satisfaction of knowing that the fiction is of the best and such as is calculated to exercise a healthy influence in widening the outlook and forming the taste of the present generation of boys and girls. It should be added, however, that in almost every school of any size there is a serious-minded minority of clever pupils who dip pretty extensively into biography and travel and read Tennyson.

COMPOSITION.—The improvement in composition was well maintained. The essays were, by common consent, lively and correct, there being few definite violations of the laws of syntax. This is excellent, so far as it goes; and perhaps little more can be looked for from the average intermediate pupil. That, in spite of these qualities, the bulk of the essays did not, in the judgment of the sterner revisers, rise above mediocrity was due to want of knowledge and to want of style. . . . As regards style, there seems to be a definite improvement in respect of arrangement; not a few of the writers showed signs of having planned out their essays, and most of them attempted some division into paragraphs. Too often, however, the preliminaries occupied a disproportionate space. Sentence-construction was distinctly defective. Nor did the sense of the value of words betray its existence in any strength. One very interesting observation made by a reviser deserves to be recorded. Quite the best writing in many of the papers, he says, was done in the account of the "Pilgrim's Progress." Bunyan's style appears to be infectious, so that even candidates who had made poor work of the set composition here wrote in simple, direct, and forcible English.

It would seem that the knowledge of etymology, though extending, is not yet sufficiently applied to the interpretation of concrete examples as they arise in their contexts. The answers on literature showed considerable width of reading and information, and some taste. The Chaucer question revealed a widespread knowledge of the "Prologue," generally (but not always) at first hand. Spenser, on the other hand, is little read. From many points of view this is surely a mistake. His poetry can be profitably read in large blocks at a comparatively early stage. The Shakespeare question produced some brilliant answers from the best candidates; but it also exercised a fatal fascination on the weakest, who proved quite unable to deal with it or so much as to comprehend its terms. By one of those astonishing errors which seem inseparable from examination work, "climate" was frequently misread as "climax." At one school every candidate, without exception, was guilty of this blunder. The treatment of the quotations from "Paradise Lost" suggests to the chief examiner the desirability of repeating the recommendation offered in a previous report—that teachers should occasionally practise dictation of verse.

HISTORY.—It is impossible, as yet, to rate very highly the value of the history work done in the majority of our schools. Movement and progress are undoubtedly taking place. Better methods are being introduced, and the standard of attainment to be aimed at is becoming more generally understood. At the same time, the contrast between the work done where the subject is in the hands of a teacher who makes it his special interest, and the work done under one who has no particular knowledge or aptitude, is often very marked. It is the contrast between real living teaching and the mere effort, vigorous enough sometimes, to induce the pupils to get up a text-book for examination purposes. Our inspectors lament the persistent lack of suitable illustrative material. This is a defect for which there can be little excuse, at all events in our larger schools. Apparatus of an appropriate character can now be procured at comparatively little cost. And even where such cost is beyond the reach of managers something might be done by a systematic endeavour to bring the pupils into touch with the "primary sources" in the shape of first-hand accounts of famous historical events. . . .

No subject seems to suffer so much as history from the present congestion of the secondary curriculum. The history teacher is haunted by the thought of the immense field he has to cover. Hence he is apt to lecture hard for every minute of the too brief period, while the pupils sit in a state of more or less inactive receptivity. There is no time for discussion or for oral catechism, and the pupils' minds, therefore, do not react upon the material.

GEOGRAPHY.—I am glad to say that the standard of work in geography seems to be steadily rising. The subject is being treated more and more on the regional method, and the work is consequently gaining in intelligence. In a few of the larger schools teachers with specialist qualifications are being appointed to take over the bulk of the instruction. The practical part of the study is receiving a larger measure of attention. In some cases it has been handed over to the science staff with excellent results. In others the English masters have resolutely set themselves to acquire the technical knowledge necessary for success under the new conditions. Exercises on the Ordnance Survey map of the district in which the school lies, on maps of all kinds—temperature, rainfall, vegetation, &c.—and elementary field work, are reported to be much in evidence. Almost everywhere a fair extent of topographical and commercial geography is covered, and it is obvious

that efforts are being made to render the instruction as interesting as possible. A larger supply of such aids to geographical teaching as photographs, models, and maps is rather urgently required.

LATIN.—In connection with the teaching of classics, the reports of the inspectors record much that affords good grounds for satisfaction. At the same time, there are defects which require to be strongly impressed on the notice of those concerned. . . . In the Latin lesson there is still too much rigid grammatical and syntactical analysis, with the result that there is not sufficient time left for rapid reading and for oral practice in composition. The difficulty of finding suitable reading material for beginners is, of course, immense. But there is no reason to think that it is insuperable. If a strong enough demand for improved texts were put forward, and if there were a clear enough apprehension as to what should constitute the leading characteristics of such a text, the want would undoubtedly be supplied. . . .

Skilled instruction is every whit as necessary in the case of beginners as in the case of more advanced pupils—a truism which, it is to be feared, managers sometimes overlook. Our inspectors report that it is not uncommon to find the initiatory class placed in charge of a teacher whose main qualification is that he knows only a little Latin. In the upper stages a great deal of solid achievement is apparent. The work often reaches a high level of scholarship, the main weakness being, perhaps, an almost universal lack of neatness and idiomatic propriety in translating from Latin into English. Literality is presumed to be the safeguard of accuracy. The radical differences of the two idioms are not sufficiently illustrated by showing how a complicated Latin sentence would be disentangled and structurally simplified in English. One result of this is that Latin composition suffers seriously in the upper classes, just as in the lower classes it suffers from the want of systematic and adequate oral practice and from the tyranny of the conventional composition book. It is not realised that the normal development of the method now employed in many schools in the initial stages is practice in composition, based on the reading-book, and involving constructions that have been learned in the course of the reading.

FRENCH.—The reports received from the visiting inspectors regarding the work in French are unanimous in bearing testimony to a gradual advance in the average of the qualifications possessed by the teachers. It would be difficult to speak too warmly of the self-sacrifice displayed by those of them who make a point of spending their holiday season abroad in order to improve their own command of the language in which they have to give instruction. Pronunciation and oral facility are, of course, not the end of the matter, and it is just for this reason that the practice of attending properly organised vacation courses in France is to be encouraged, because, on the literary side of language study, French *conférenciers* are often eminently qualified to be of real service for practical instruction, for stimulus, and for guidance. It is of the utmost importance that those who have to deal with French in our schools, particularly in the older classes, should have a well-developed literary taste as well as adequate linguistic experience. They ought to know what a really good English translation means. In a word, the higher and more cultivated their scholarship, the greater will be the educational value of their work. As a matter of fact, those who have a thorough academic training in the language may often be trusted to remedy a deficiency in conversational power more easily than those who possess conversational power alone can supply the lack of exact scholarship.

Pronunciation has made rapid strides in a great many schools, and reaches a high standard here and there, notably where the problem is faced in a scientific spirit and all available aids—the use of phonetic script, for example—turned to useful account. A great deal, however, still remains to be done. Repetition should be more frequent and more spirited, and the correction of oral blunders should be persevered in with unrelenting vigilance. Not nearly enough advantage is taken of phonetics. . . .

Speaking generally, it may be said that the "new" or "direct" method continues to make headway. Greater freshness and confidence are apparent in the teacher's work. Songs, dialogues, short plays, narration of simple stories, oral description of places and scenes in the neighbourhood of the school, oral discussion on prepared topics, all come in to relieve the "ancient solitary reign" of the grammar-book. School reading, too, is growing more varied, and of more reasonable difficulty, though the tendency to undue haste towards what is hard is slow to disappear.

GERMAN.—In last year's report I ventured to discuss some of the causes which had been suggested as adequate to account for the undoubted eclipse which the popularity of German has recently undergone. The conclusion there come to is fully borne out by the testimony of those inspectors who have again taken trouble to investigate the matter. The main reason for the decline is the force of tradition. German is seldom a real option, being almost invariably taken along with French or Latin or both. In a very few schools it replaces French as the first modern language to be studied, and in such cases the results are extremely good. One can only hope that the greater liberty of choice in respect of post-intermediate curricula, to which allusion has already more than once been made, will be taken full advantage of, so that German may obtain that opportunity for equality of treatment which appears at present to be hardly open to it. It is difficult to believe that, with such an opportunity, a language so supremely valuable in every department of literature and science would not exercise a stronger power of attraction than it appears to do at present. It is much to be wished that one could see in our intermediate and secondary schools generally the same amount of enthusiasm and conviction directed to the teaching of German as are almost everywhere extended to the teaching of French. But the remedy does not lie in adding German to a curriculum already full on the linguistic side. It lies in the offering of a genuine option. Against the contention that this would involve difficulties of staff organisation, one may set the fact that there are many capable teachers keenly interested in German who find at present too little scope for the exercise of their talent, and would welcome, indeed eagerly welcome, the prospect of larger and better classes.

MATHEMATICS.—Mathematical subjects continue to be handled in the schools with a satisfactory degree of efficiency and success. Within recent years a considerable change has taken place in the ideal aimed at and in the methods employed to attain it. This movement still continues, and its beneficial effects are making themselves more and more strongly felt. Of course there is still much to be done. In regard to arithmetic, for instance, teachers here and there persist in the mistaken policy of attempting to drill their pupils mechanically in the practical application of rules and formulæ, instead of endeavouring to get them to apprehend the fundamental principles on which rules and formulæ alike are based. Thus "stocks and shares" are too frequently permitted to find their way

into the course of the intermediate pupil. And it seems very hard to eradicate the old tradition that arithmetic is a thing by itself, to be taught without reference to any other branch of mathematical knowledge. There are, of course, many schools to which those criticisms, fortunately, do not apply, and where generalised arithmetic is making good headway, being frequently and suitably used as an introduction to algebra. Contracted methods, however, are far too rarely employed, not only in the mathematical class-room, but also in the science laboratory. Their use would tend to obviate the absurdities which the misplacing of a decimal often introduces into statements of results. Another desirable development would be the extension of graphical methods of proving or illustrating the fundamental laws of algebra; and the fact that this method allows an appeal to be made to the sense of sight is an additional argument for its adoption. . . .

It is undoubtedly in geometry that the change in methods to which I have referred has been most strongly marked. From the point of view of school work, this is perhaps the most important aspect of mathematical study, and it is gratifying to know that the evidences of improvement are discernible here at least as clearly as in connection with any other branch of the subject.

SCIENCE.—The good and efficient work in experimental science referred to in previous reports is being well maintained.

At the same time, it must not be supposed that we have reached a stage at all approaching perfection. Several of our inspectors direct attention to the necessity of re-considering, from time to time, in the light of experience, both the scope of the syllabus and the methods of instruction. One or two points may be singled out for mention. More care should be taken to link up the nature-study of the primary school in some effective fashion with the intermediate science course, while it is not certain that the constituents of the latter course are always wisely selected. Some of our inspectors, for example, consider that girls are, as yet, inadequately provided for. The baneful effects of over-ambition are also occasionally observable. There are teachers who seem to be obsessed by the notion that a certain imposed definite amount of work must be overtaken. As the limits of time available have recently been somewhat reduced, the inevitable consequence is an endeavour to pack too much into the scheme, with disappointing results in the matter of the development of intelligence. Next to over-ambitious schemes of instruction, perhaps the most potent cause of weakness is the want of sufficient provision for independent work by the pupils. There is nothing that can compensate for the absence of individual effort, for it is by individual effort alone that self-reliance can be developed. Note-books seem to be, on the whole, very well kept, but more might be done in the way of arranging for occasional summaries, in which the facts, acquired by experiments, might be grouped together and attached to some definite statement of fundamental importance.

Natural History Pictures. Thirteen pictures, 20 in. × 16 in. (Pitman.) 1s. each.—These pictures may be recommended warmly. They are reproductions from photographic studies of the elephant, bison, llama, zebra, camel, reindeer, kangaroo, tiger, lion, polar bear, ostrich, eagle, and owl respectively, and are really works of art. A concise descriptive note by Mr. R. Lydekker is given at the foot of each. The pictures are mounted, varnished, and supplied with cord ready for hanging.

THE EDUCATION OF THE ADOLESCENT.[1]

By T. H. J. UNDERDOWN.

THE main subject of my address is the need for raising the school age and for educational care during the period of adolescence. The neglect of the State to provide guidance and care for those between twelve—the present statutory minimum leaving age—and eighteen years of age results in the waste of a large part of the early training in the primary school, "in injury to character, in the lessening of industrial efficiency, and in the lowering of ideals of personal and civic duty."

Unfortunately, no statistics are compiled by the Board of Education to show the number of children who leave school at the ages of twelve, thirteen, and fourteen respectively; but the Consultative Committee of the Board, in its report on "Attendance, Compulsory or Otherwise, at Continuation Schools," has estimated that at the present time 211,000 children between the ages of twelve and fourteen, out of a possible 1,216,000, have ceased to attend the primary school. Of those 211,000, some are to be found amongst the 90,000 taking the four years' course in those secondary schools which receive grants from the Board of Education.

Another leakage in the primary-school system is that of half-time permitted under local attendance bye-laws. Under the Robson Act of 1899, the rural child at the tender age of eleven may become a half-time agricultural labourer until thirteen, when the State ceases to care for him any further. The urban child may receive half-time exemption and enter the factory. The total number of half-timers recorded in 1900–1 was 74,468, the low-water mark of recent years. In 1907–8 the number had increased to 84,498. The following figures are compiled from the recent report of the Inter-departmental Committee on Partial Exemption:

Average number of half-timers on registers for 1906-7	Employment
34,306	In factories
3,800	Agriculture
9,254	Other occupations
47,360	Total

Another pernicious form of juvenile labour is street-trading, which undermines and militates against the humanising influences of the primary school. The Employment of Children Act, 1903, gave local authorities power to make and enforce bye-lays controlling street-trading up to the age of sixteen, and all industrial work outside factories, workshops, and mines up to fourteen years of age. During the first four years only one county authority—the London County Council—thirty-two county boroughs, twenty-eight boroughs, and four urban districts in England and Wales took advantage of this Act; and while these few use their powers efficiently, in the great majority of our large centres of population the street arab roams unchecked.

Such is the toll levied by wealthy England upon hundreds of thousands of her children ere they pass the threshold of the primary school and step forth to enter upon their life's work. They are heavily handicapped at the starting-post, and the further they progress to manhood the further do they drop behind in the educational race. For example, of the 180,000 children who leave the primary school annually between the ages of thirteen and fourteen, only 40,000 attend an evening school and but few reach the

[1] From the president's address to the National Federation of Assistant Teachers at Northampton, September 24th, 1909.

secondary school, leaving nearly 140,000 who at that period of their lives entirely discontinue their education. In a few years these young people have forgotten much that they learned, and at eighteen they are found amongst the illiterates, and provoke the ratepayer to point the finger of scorn at the primary school. With a full knowledge of these sources of waste in our present system we emphatically claim for the child: (i) the abolition of half-time employment; (ii) the prohibition of street-trading under sixteen; and (iii) the raising of the statutory minimum leaving age from twelve to fourteen, accompanied by powers under local bye-laws to enforce attendance until fifteen or sixteen. These urgent reforms must take first place in any advance the legislature makes in education; for it is of little use to attempt to extend the superstructure of further education provided by secondary, technical, and continuation schools until the foundations in the primary schools are truly and firmly laid.

The extension of the school age I have urged would still leave unchecked the great educational wastage now going on amongst those who cease to attend school at fourteen. It is estimated there are about 2,000,000 children in England and Wales between fourteen and seventeen years of age, of whom 75 per cent. are receiving no educational care from the State. These years are the most critical in the life of the future citizen. Stability of character cannot be fully established at fourteen years of age. The period of adolescence should be a time of mental and moral discipline, a time for strengthening the power of self-reliance, and a time in which the elements of character implanted in the primary school and in the good home are jealously guarded, tended, and cultivated until the stability of manhood is reached.

What are the conditions of labour under which these critical years are usually spent? Figures are unavailable, but there is reason to believe that year by year fewer enter a skilled trade on leaving school. Under the former conditions of industry a boy left school to enter upon his term of apprenticeship, and thus continued his education or his general training. The decay of the apprenticeship system has been brought about by the changes in our industrial methods, by the subdivision of labour, by the use of machinery, and by the development of the factory system at the expense of the smaller workshop. This change has brought its disadvantages. The former tuition, general as it may often have been, has given place to the more modern but slipshod process of having "to pick it up." It is now more difficult to obtain a general knowledge, and skill can be obtained in only one branch of the trade. Thus the workman is evolved highly skilful in one limited direction and correspondingly narrow in a true appreciation of his trade.

The changes in our industrial system have also increased the opportunities for non-educative employment. Mr. Sidney Webb has stated that to-day in London some 40 per cent. of the boys leaving day schools become van or errand boys. The ranks of the van boys, the messengers, the porters, and of a large proportion of factory workers are easily entered, but too often end in a "blind-alley." The wages are at first proportionally high, but in a few years this worker finds himself ill-paid, untrained, and under-employed or unemployable. On the moral side of the question, the adolescent in the factory finds the monotonous routine, amidst the whirl of machinery, a deadening influence upon his mental powers and a bar to his physical and educational progress.

In the midst of these difficulties it is remarkable that our voluntary system of continuation schools has met with even the moderate success it has attained—a success achieved by the enlightened policy of many education authorities, by the grit and perseverance of the better-placed adolescents, by the direct encouragement of many employers, and by the constant efforts of teachers and others interested in the social problem. From the statistics of the Board of Education I make this comparison of the students attending evening schools:

Age	1903-4	1906-7	Increase	I'c. per cent.
15 to 21 ...	359,503 ...	362,627 ...	3,124 ...	0·8
Over 21 ...	181,756 ...	240,987 ...	59,231 ...	32·5

The outstanding weakness of the present system, therefore, is the lack of growth in the numbers (0·8 per cent.) between the ages of fifteen and twenty-one, a striking contrast when set against the great increase (32·5 per cent.) of the adults. These figures indicate very plainly that the voluntary system breaks down just where it is most needed, and that we are drifting to an untenable and illogical situation: we educate our children at the public expense until they are thirteen or fourteen; we then allow them to be exploited by employers and parents for private, pecuniary gain; and, finally, we ask the State to undertake the burden of re-educating them in their manhood or womanhood.

What are our competitors abroad doing in the matter? France and the United States adhere to the voluntary system, but in the latter case the leaving age is higher than in this country. Compulsory attendance is enforced in twenty-two out of twenty-six States in the German Empire. In Switzerland an area containing 88 per cent. of the population is under compulsion in this matter. Always in the vanguard educationally, Scotland secured powers under her Education Act of 1908 to enforce compulsory attendance at the local option of the school boards. It is too early to draw any conclusions from the operation of the Act, but it appears that the larger school boards, such as that for Glasgow, are using their powers as a leverage to bolster up and strengthen the present system, with the implied intimation that if moral suasion fails compulsion will inevitably follow.

Is England—and gallant Wales—to drop out of the first rank? In my opinion—and here I speak for myself alone—our voluntary system, as rapidly and as smoothly as possible, must give place to a scheme of compulsory attendance at continuation schools for those under eighteen years of age. This is no new principle. We stand in this matter to-day where we stood forty years ago, when the State, realising the ineffectiveness of voluntary attendance at the primary day school, adopted compulsory attendance under the Act of 1870. First of all, a statutory limitation upon the hours of labour for those under eighteen is necessary, leaving a reasonable margin for further training as well as for rest and recreation. The minority report of the Royal Commission on the Poor Law favours thirty hours per week at work and thirty hours of school. But this is too drastic for a first step. It should be the employer's duty to afford facilities, and the duty of the local education authority to make arrangements, for the school to meet at a time which will best suit the local conditions of labour. In making these changes the legislator will probably find it necessary, and most certainly convenient, to take public opinion along with him, and for this reason the system of local option in the Scottish Education Act of last year will stand the best chance of success in Parliament. But this would widen the gulf already existing between the most progressive and the most reactionary of our local authorities, and would indefinitely postpone any advance in many towns and in

almost every county. The more statesmanlike step, therefore, appears to be a moderate, compulsory advance enforced by the legislature, allowing a margin for local bye-laws. Many issues are involved—the provision of exemption for those who have attended full time at day school until sixteen, and for those who are receiving approved instruction in business methods, in the principles of a skilled trade, and the like. These must wait until we come to close grips with the definite proposals. Then we must keep this principle before us: that the State must insist upon every adolescent worker receiving adequate preparation for an adult calling.

HISTORY AND CURRENT EVENTS.

THE North Pole has apparently been reached at last. What will be the result of the unedifying discussion between the rival explorers still remains to be seen, and does not immediately concern us. We note, however, that the word used by some persons to describe the achievement is curious. It is said that the North Pole has been *discovered*. The word may have a meaning with reference perhaps to the nature of the surroundings, which, it appears, consist of a frozen sea. It cannot, of course, refer to the position of the Pole, which was known before at least any of our recent Polar explorers were born. The word has a meaning, too, in international law. When Europeans began at the end of the fifteenth century to "discover" new lands, which they regarded as belonging to no one because they were not inhabited by Christians, rules began to be applied, borrowed from the Roman law, which should decide the ownership of the "property" thus found; and there is much in the text-books of international law as to "discovery" and "effective occupation." But who can "effectively occupy" the neighbourhood of 90° N., and what is the meaning of some talk we have heard of that neighbourhood thus belonging to the nation to which the successful explorers belong?

THIS year has been full of celebrations, centenaries of the births or deaths of famous men, and others of the like. We would direct the attention of our readers to one of these celebrations which does not seem to have attracted so much notice as others—that of Matthew Boulton, who died in August, 1809. Even our youngest pupils know something of James Watt, who, though he did not invent the steam engine, first made it a practical force in mechanics. But comparatively few know anything of the man without whose aid Watt's career, with all his genius, would probably have been a failure. Dr. Smiles in his "Lives of the Engineers" entitles the volume dealing with the steam engine "Boulton and Watt," and he shows there how the formation of the Soho firm of that name was necessary, we might say, to the development of the new power. Watt was inventive but despairing. Boulton supplied the hope and the means, and the combination had the result that we all know.

THE French have also had their celebrations, and among them has been the erection of a monument on the battlefield of Malplaquet. To those who know a little history this will be astonishing. Our schoolboys know "Malplaquet" as the fourth of Marlborough's great "victories." But those who know more of the history of the War of the Spanish Succession will not need to reckon the *entente cordiale* as one of the reasons for the erection of this monument. The Grand Alliance, which was the dying work of William III., was never a very hearty union. The allies were all mutually jealous. England and the Netherlands did not agree even on military programmes, and "Charles III." of Spain had greater objects than England proposed for him. Therefore, in 1709, though France was all but exhausted, she had hopes of peace by disuniting her enemies, and Malplaquet, though a "victory," "was won," as one of our latest historians tells us, "at a price which made it scarcely more tolerable than a defeat." That and other events in England and elsewhere led to the negotiations of 1710 and subsequent years, which ended at last in the peace of 1713.

TRAVEL is so easy nowadays that most educated English folk have at some time or other found their way to Switzerland, and have therefore visited the town of Lucerne. The "Lion" of that town is therefore well known to most of us, at least by the reproductions of it brought home by our friends, and the news that it is in imminent danger of destruction consequently has a widespread interest. And, because of the popularity of Carlyle's book on the French Revolution, or of our reading on that subject in other books, it is surely not necessary to do more than recall the incident which the "lion" commemorates—how in August, 1792, owing to thorough determination on one side and utter lack of determination on the other, the Swiss Guards of Louis XVI. died in defence of the palace which the King had forsaken. Now, owing to the climatic conditions of the spot chosen for the monument, it is perishing. It wants a climate like that of Egypt to preserve monuments carved in the rock.

ITEMS OF INTEREST.

GENERAL.

THE annual general meeting of the Association of Headmasters is to take place in London on January 12th and 13th, 1910.

THE annual meetings of the Association of Assistant-masters will be held on January 5th to 7th, 1910. The place of meeting has not yet been definitely settled, but it will probably be the City of London School, E.C. Among the subjects for discussion will be an important report on the "Conditions of Service of Secondary-school Teachers in Foreign Countries," prepared by a special committee which has been making investigations on this subject during the past year. Several well-known educationists are expected to take part in the discussion, which cannot fail to be of interest to all secondary-school teachers. The annual dinner of the association will be held at Pagani's Restaurant, Great Portland Street, London, W., on January 6th, at 7.30 p.m.

THE next annual general meeting of the Association of Assistant-mistresses in Public Secondary Schools is to be held on January 8th, 1910.

THE Board of Agriculture and Fisheries and the Board of Education propose to constitute a Rural Education Conference for the discussion of all questions connected with education in rural districts. The conference will consist of members nominated by the County Councils' Association, the Agricultural Education Association, the Royal Agricultural Society of England, and other leading agricultural organisations, together with six additional members to be nominated by the two Boards so as to provide for the inclusion (*a*) of persons specially competent to deal with educational questions so far as the rural districts are concerned, and (*b*) of representatives of districts not adequately covered by existing agricultural organisations. In future, all Parliamentary grants in respect of agricultural educa-

tion will be distributed, in the case of institutions giving instruction to students taking advanced courses in agriculture, by the Board of Agriculture, and as regards other forms of agricultural education by the Board of Education. To facilitate this arrangement, an inter-departmental committee, consisting of responsible officers of the two Boards, will be constituted, to consider all questions which may arise either as to the correlation of the duties of the two Boards or as to the grants to be made in cases in which they are mutually interested.

THE sphere of work falling to the Board of Agriculture and Fisheries will comprise institutions of two types: (*a*) Those the predominant work of which is to provide courses of agricultural instruction of an advanced nature to suitably educated youths of about seventeen years of age. Each such institution will serve more than one local education authority's area. (*b*) Institutions restricted to one special section of agricultural instruction—*e.g.*, forestry or dairying—the main purpose of which is to provide such a course of teaching in that subject as will equip those who pass satisfactorily through it to be competent instructors of agricultural work. The relations of the Board of Education will be with the county and other local authorities supplying part of the local system of education. The inspectors of the Board of Education will represent to the authorities the need for continuous development of agricultural education, particularly as regards an increased provision of farm schools. It has been arranged that such Parliamentary grants as may be available for the establishment of farms and experimental stations shall be distributed by the Board of Agriculture, the grant in respect of the educational work of the farm schools being made by the Board of Education.

THE total number of candidates at the examinations of the Royal Society of Arts in 1909 was 25,042, including advanced, 4,777; intermediate, 11,076; elementary, 9,196. This is an increase of 2,535 upon the 22,597 candidates of 1908. The number of papers worked by the candidates was: advanced, 5,433; intermediate (including theory of music), 12,512; elementary, 11,069; or 29,014 papers in all. In addition to this there were sixty-five shorthand and typewriting candidates at the special Army examinations. In addition to these, again, there were 656 candidates in colloquial modern languages, and 392 in the practice of music. The total number of candidates during the year ending July last was, therefore, 26,157. The increase from 22,597 to 25,042 candidates was spread over practically all the subjects of examination, the only subjects showing a decrease being Italian, Spanish, and Swedish, and even in these the difference was very trifling. Last year there were three candidates in Japanese and one in Hindustani. This year there are none in either subject, but for the first time Chinese appears on the list. It attracted two candidates. As has been the case for some years past, the greatest number of entries was in book-keeping, which shows a total of 9,402 in all stages—nearly a thousand more than last year. The next largest number is shorthand, in which there were 7,480 papers worked—an increase of about 600. French comes third. This subject has shown a steady increase of recent years, the numbers being 3,287—an increase of about 500 over last year and 1,200 over 1905.

MR. J. G. LEGGE, Director of Education in Liverpool, in a report which he has prepared for the Liverpool Education Committee regarding the feasibility of providing training in elementary military drill and shooting in elementary schools, says that, on the whole, he is inclined to recommend that the experiment should be tried of practising rifle-shooting in elementary schools. He maintains it gives a training to the eye of the finest kind and precisely the kind of which modern civilisation tends to deprive a man.

THE first part of the "Statistics of Public Education in England and Wales, 1907–8," has been published (Cd. 4885) by the Board of Education, and deals wholly with educational statistics. The most important new feature is the portion relating to the statistics of secondary schools. These have been improved greatly in scope, and the figures constitute an advance on any statistics of secondary schools in England ever before published. In addition to particulars about schools in receipt of grants, information of a corresponding character is provided respecting fifty secondary schools, with nearly 9,000 pupils, which have been recognised by the Board as efficient, though they are not eligible, or have not applied, for admission to the grant list. The figures relating to the organisation of secondary schools, and the ages and average school life of pupils, have been taken from returns supplied by the schools.

IT appears that on July 31st, 1908, there were 736 secondary schools on the grant list of the Board of Education, including 320 for boys, 239 for girls, and 177 for boys and girls. On the corresponding date of the previous year there were in these schools 3,988 men teachers and 3,593 women teachers. On October 1st, 1907, of 68,104 boys in these schools, 15,365 were under twelve years of age, 47,919 were between twelve and sixteen years of age, and 4,820 only were either sixteen years of age or over. In the case of the 56,359 girls, the corresponding numbers were 11,540, 37,213, and 7,606. The 736 schools were made up as follows: 239 council schools, 31 schools of the Girls' Public Day School Trust, 48 Roman Catholic schools, and 418 foundation and other schools.

THE September number of the *Journal of Geography* of the Teachers' College, Columbia University, New York City, contains two interesting articles dealing with geography as a school subject and with geographical laboratories. The first is the report of an American Committee on Secondary-school Geography, and emphasises the dissatisfaction prevalent with the existing course of geography, established in consequence of the work of the National Committee which met in 1892 and 1897. A summary of the main objections may be useful in preventing similar dissatisfaction in our own country in years to come: (*a*) too much emphasis is placed upon the detailed study of land forms; (*b*) a concrete study of human response to environment does not receive attention; (*c*) the course does not give the student a grasp of the natural resources, the industries, and the commerce of the world; (*d*) the course, as at present organised, cannot give the student that knowledge of the regions and peoples of the world which intelligent participation in the affairs of life requires. The report contains a statement of the essentials of a good course. These may be epitomised: (i) the influence of the sun upon human life; (ii) the influence of atmospheric phenomena upon human life; (iii) the ocean as a modifier of climate and as a medium for commercial transport; (iv) land forms in relation to human activities; (v) larger features of the resources of the homeland; (vi) general geography of the rest of the world; (vii) geographical influences on history; (viii) human responses to geographical processes. This record of the results attained by a special committee in the United States is not without importance for English teachers.

The second article describes, with illustrations, the equipment of a laboratory for physical geography. It must be noted at once that practical work in geography in America has been, for the last decade at least, confined to physical geography; no attempt appears to have been made to teach other aspects of geographical science by means of practical exercises. The laboratory contains nests of drawers for the accommodation of survey, climatic, and geological maps, several appliances for hanging and displaying larger maps, relief models, and supplies of globes for the use of the pupils. Cases are made for geological specimens. The pupils' work-tables are supplied with uprights and cross-bars for the suspension of small maps. A lantern and nest of drawers with card index for slides is placed in the lecture-room adjoining the laboratory, and in the basement a cement floor and a large depressed area are supplied for experiments in erosion. On the roof a class can be accommodated for experiments in viewing the surrounding country, in observations of the sun, and of the meteorological apparatus. Water at a sink, gas and electricity, are laid on both in lecture-room and laboratory. The article is very suggestive, and should be helpful to those teachers who are planning similar rooms in which to carry out the practical work in the teaching of geography which is becoming recognised as essential to the study of a scientific subject.

Despite the reiterated comment of the examiners that much of the work sent up for competition is immature, the "Report of the Examiners on the Selected Works of Schools of Art," &c., in the national competition of 1909 forms encouraging reading, and indicates that in many respects our art students are progressing satisfactorily and on the right lines. In almost all departments (a notable exception being that of modelling from life and antique) the standard of merit was well in advance of that of former years. The eight gold medals awarded were distributed between Bournemouth, Exeter, Islington, Leeds, Liverpool, Nottingham, Regent Street (Polytechnic), and Sheffield Schools of Art. There were also awarded, amongst the 14,994 works submitted for examination, 88 silver medals, 236 bronze medals, and 401 book prizes, whilst 811 works were "commended." At the exhibition of selected works held at South Kensington in July last one of the most pleasing sections was that devoted to figure composition and book illustration; many of the drawings were marked by a degree of cleverness and originality which augurs well for the future of English illustration. The jewellery section was deservedly commended by the examiners on account of the appropriateness and fitness of the designs, and of a refreshing absence of eccentricity and affectation. The examiners in the painting section also expressed approval of a disposition to select less elaborate objects for still-life painting, which, it was noticeable, conduced to a broader and simpler style of painting. Among the adverse comments passed by the examiners was one worthy of wider application, which referred to the hard mechanical outline, often emphasised by "lining-in," which was found among the architectural drawings. The examiners, it may be interesting to note, also complained of the paucity of the designs for interior decoration and of the inadequate knowledge and treatment of heraldry in design; and in the pottery design section, in particular, expressed their regret that the attention of students appeared to be almost exclusively devoted to what is known as "art" pottery, and recommend that toilet ware and general domestic pottery offer a more useful and appropriate field of study.

Considering the statistics given by Miss Maude Meredith in her excellent article entitled "Children and the Nation" in the October issue of *The Englishwoman*, it would seem that many of those responsible for the education of respectable and law-abiding children might well take hints from the management of the industrial and reformatory schools. In 1906 Miss Meredith tells us that only 2·52 per cent. of the boys and 6·04 per cent. of the girls placed in employment from one of the industrial schools were unsatisfactory. Remembering that these children were embryo criminals, one is impressed by the value of the training that can produce these results from such material. The industrial schools receive children found vagrant or in immoral surroundings, while reformatories are for those between the ages of twelve and sixteen years who have been convicted of offences punishable by penal servitude or imprisonment. In both classes of schools the children are given plenty of wholesome work—chiefly of a manual kind—designed to enable them afterwards to become honest, wage-earning citizens, while it also helps to lessen the expenses of up-keep by making the schools partially self-supporting. The fact that games form an important part in the curriculum shows that the administrators have at last realised that their responsibility lies more in the prevention of youthful crime than in its punishment.

SCOTTISH.

The annual meeting of the Educational Institute of Scotland was held this year in the Synod Hall, Edinburgh. Two records were made during the day. The attendance was the largest in the history of the institute and the proceedings were the shortest. Under the benevolent despotism of the Education Department, Scottish teachers seem to be getting rid of all their grievances. At any rate, they seem to have none requiring ventilation in public, and less than an hour sufficed to dispose of all the purely business part of the programme. Dr. George Lowson, rector, Stirling High School, devoted his address, as retiring president, to a criticism of the Education (Scotland) Act of 1908, which he said "marked an enormous social and educational advance." The deficiencies in the Act, he said, will manifest themselves increasingly in the course of administration, but meanwhile the duty of teachers and managers is to lend a helping hand in order to make the best of the new machinery. At the close of the address Mr. George Fenton, Aberdeen, was elected president for the ensuing year.

Principal Sir James Donaldson, in opening the new session at St. Andrews University, referred to the radical changes that had been made in the curriculum for the arts degree. Until 1890 the degree of M.A. had a definite meaning for all the universities in Scotland, and indicated that the holders had attained a satisfactory standard in seven specified subjects, which were the same for all students. In 1890 a system of options was introduced, which tended to make the degree a thing of shreds and patches. Beginning from the present session a new system was inaugurated. The old principle of options was retained, but they had to be exercised in certain well-defined groups, and students would be required to give intensive study to one or two of the selected subjects. The principal, in the course of his address, said that women were rushing into the teaching profession in ever-increasing numbers. Of candidates for admission to the training colleges, 591 were women and only 74 men. It seemed as if men were to disappear entirely, or almost entirely, from the profession of primary-school teachers.

IN the House of Commons Sir Henry Craik questioned the Government in regard to the date for the issue of the draft scheme of superannuation as provided for in the recent Education Act. The Solicitor-General, in reply, stated that the scheme was being proceeded with, but regretted he was unable to indicate when it would be ready for publication. The framing of a superannuation scheme is at any time a matter of great complexity, and it is understood that there are special difficulties in the way in the present case. Teachers, however, are quite prepared to trust to the Department, which has all along shown itself most sympathetic in regard to the whole subject. Meanwhile, the local education authorities are applying generously the temporary powers granted them under the Act of pensioning their retiring teachers.

THE Provincial Committees for the Training of Teachers, which were constituted under Minute of the Department for 1905, have come to the close of their first term of service, and a new election has been ordered to take place on or before November 13th. It cannot be said that these committees have in any way realised the expectations with which their advent was heralded. It was generally believed that these bodies would act in some measure as advisory councils or consultative committees to the Department. Instead, they have proved to be mere phonographs for reproducing departmental records. No vestige of real power has been permitted them, and not a penny can be expended without the previously obtained sanction of the Department. They have, indeed, much less say in determining the nature and scope of the training of teachers than the old denominational bodies that they replaced. Unless there is to be a change of policy in the direction of giving the new committees real responsibility and authority, it would be better to abolish them altogether and leave the Department with the shadow, as it already has the substance, of control.

THE report by Mr. John King, director of studies, upon the work of the Edinburgh Provincial Committee, is an interesting and timely document. It is much more than a mere record of progress. It discusses in the most comprehensive manner the main questions in dispute in regard to the training of teachers, and frankly acknowledges defects in the Edinburgh scheme of training, while at the same time indicating the measures taken to repair them. The report shows that last year there were enrolled no fewer than 989 students preparing for some branch of work in connection with elementary education, while only twelve were enrolled for training as teachers of higher subjects. This dearth in the supply of secondary-school teachers is rather ominous for the future of higher education in Scotland. May it not be that the academic qualifications demanded of such students are higher than the circumstances warrant? The honours standard laid down in the regulations might very well be replaced by a pass with distinction in the intensive courses set up by the new university ordinances. The proposal to abolish "the so-called cultural subjects" in the training college is one that demands the serious consideration of the teaching profession. Such a proposal is exceedingly inopportune at the present moment, when the average calibre of the training-college student is lower than it has been for years owing to the influx of students who have only passed third class in the admission examination. It seems to us that a sound general education is the most professional of all a teacher's qualifications, the *materia pedagogica* indeed of his profession, and to neglect that during a course of training is to send forth the future teacher maimed and fettered from the outset of his career.

PROPOSALS for the revision of the curricula have occupied the committee for the greater part of last year, and the outstanding features in the new arrangement may be summarised as follows: (i) The normal course for students in training (other than graduates) will extend to two years. (ii) Such students as have given evidence, during their two years' term at the training college, of real ability may be selected for a third or fourth year of training, and during this extended period of training will be permitted to devote practically their whole time to the study of their university subjects. (iii) With regard to the so-called cultural subjects, it is assumed that, as the junior student course provides a sound basis of general education, there will be no longer the same necessity for extending the student's general education during the training-college course. (iv) Increased emphasis is to be laid on professional training, and especially on practical teaching.

INTIMATION is made that the written examinations for leaving and intermediate certificates will begin on Tuesday, March 15th, 1910. The Department deprecates the haphazard presentation of pupils in isolated subjects, and expects that every candidate admitted to the examinations will have some definite form of group certificate in view. Teachers are reminded that next year separate papers will be set in history and geography both for the intermediate and leaving certificate.

IRISH.

THE Intermediate Board published about the middle of September the list of exhibitions and medals obtained at the last examinations in June. This list has caused a great deal of dissatisfaction, for two reasons. There are, first, loud complaints at the decrease in the number of exhibitions awarded, especially in certain groups, and, in the second place, there is no list of prizes issued, as is usual with the exhibition list. This is postponed, it is understood, for financial reasons, the Board not being able to afford the money which would be necessary if all the prizes were awarded in accordance with its rules.

THE actual number of exhibitions awarded is as follows:

Boys.

Group	Classics	Mod. Lit. 1 (French or German and Irish)	Mod. Lit 2 (French and German)	Math.	Science
Senior Grade—					
First Class (£40)	4	0	2	5	5
Second ,, (£20)	3	3	1	8	9
Middle Grade—					
First Class (£25)	6	3	3	6	6
Second ,, (£15)	8	4	4	8	8
Junior Grade—					
First Class (£15)	10	5	6	10	10
Second ,, (£10)	14	7	6	14	14
	45	22	22	51	52

Girls.

Senior Grade—					
First Class (£40)	1	0	2	3	1
Second ,, (£20)	0	4	3	1	2
Middle Grade—					
First Class (£25)	0	0	4	2	1
Second ,, (£15)	0	3	2	4	1
Junior Grade—					
First Class (£15)	2	5	6	5	6
Second ,, (£10)	0	10	10	5	7
	3	22	27	20	18

It may be observed that the number of exhibitions awarded in each group is roughly the same (counting the two divisions of the modern literary group as one), except that for the girls the number of exhibitions in the classical

group being very small, the number in the modern literary group is more than doubled, thus preserving the balance between the literary and mathematical and science groups.

THE group system, however, seems to be in danger of breaking down. The above analysis takes account only of the exhibitions actually awarded; but the list also contains, printed in italics, the names of students who were eligible for exhibitions in one or more other courses in addition to the one in which an exhibition was actually allotted to them. These names are very numerous—to such an extent that the specialisation which the group system was intended to encourage is seen to amount to practically nothing.

THE Catholic Headmasters' Association at its meeting this autumn confined itself mainly to two questions: (i) inspection; (ii) the marking at the recent examinations. On the question of inspection, the association issues a short summary of its views as to how far Parliament has authorised it, and concludes that it has been sanctioned only so far as to empower the Board, "in order to encourage schools of more than average efficiency," to increase the "normal school grant" payable to such schools by certain bonuses, amongst them a "bonus as the result of inspection, subject to the limitations in the body of our report" (*i.e.*, the report of the Vice-Regal Commission of 1899). The scope of inspection as recommended is defined as including, besides the function of supplementing written examination by oral tests, "the purpose of satisfying the Board as to the sufficiency of the teaching staff, the sanitary condition of the school, and the reasonableness of the arrangements as to school hours." On these grounds the association says that "the inspection of the residential departments of boarding schools is clearly outside the province of the Board." In this it is no doubt right, as such inspection would "introduce, for the first time, an element of inequality between different classes of schools." The association does not seem on such strong ground when it seems to object to an inquiry into the qualifications of teachers or their salaries. How is the Board to tell whether more money is required to improve the efficiency of the teacher unless it has this information? On the question of the examinations, the association publishes some remarkable figures as to the marking in English and in Irish in the middle and senior grades, and asks for a re-examination of the papers.

THE Christian Brothers' Education Committee has also issued a statement comparing the allocation of exhibitions this year very unfavourably with that of last year. It complains especially of the treatment of Irish. As shown above in the boys' division, the modern literary group has roughly the same number of exhibitions as the other groups, the Irish division having exactly the same number as the French and German division. The points of complaint are: (i) that between six and seven times as many boys passed in the Irish division as in the other, and that it is therefore entitled to a larger proportion of exhibitions; and (ii) that there is a very large reduction this year in the number of exhibitions awarded in some of the groups, especially in the Irish division, where the number last year was seventy-five and this year is twenty-two.

THE Schoolmasters' Association (Protestant) had the resolutions of the Catholic Headmasters' Association before it at a subsequent meeting, but declined to express any opinion upon them. On inspection it passed a resolution that the inspectors should make the situation, the methods of teaching, and the qualifications of the staff matters of importance in their report, as well as the proficiency of the pupils in the several branches of learning. Other resolutions dwelt on the importance of arithmetic, and of book-keeping and shorthand; and a resolution was also passed asking the association to petition the Government to take steps for the appointment of a Board which shall be representative of the several bodies in Ireland that are interested in secondary education. Both the Protestant and Catholic Associations renewed their protests against Rule 12 (*b*) preventing a student from entering a second time for examination in the same grade, and also urged the Board to restore what is known as the "principle of averages."

WELSH.

THE great event of last month in Welsh education was the opening of the new buildings of the University College of South Wales and Monmouthshire at Cardiff by the Earl of Plymouth. His Majesty the King, as Protector of the University of Wales, sent his wish that "all success and prosperity may attend its future work." The Prince of Wales, the Chancellor of the University of Wales, wrote: "We must look ahead and endeavour to be ready to meet all requirements of scientific and intellectual progress." The proceedings were carried through with the greatest *éclat*; and Cardiff College is to be congratulated heartily on the opening of the new beautiful buildings in Cathays Park. The library, the gift of the Drapers' Company, was opened specially by the Worshipful Master of the company, who recalled the fact that the Drapers' Company had been for several hundred years in direct contact with Wales. About 1540 Thomas Howell, a Welshman, gave 1,200 golden ducats to the company. In 1853 a scheme was sanctioned by the Court of Chancery under which the income from the Thomas Howell fund was to be applied for the maintenance of a girls' school in Denbigh and another in Glamorgan, whilst a further portion was allocated for educational purposes in Monmouthshire, Newport, and Cardiff.

THE M.A. degree in the University of Wales is given on the presentation of a thesis which satisfies the examiners. The following are examples of the topics of the successful theses presented in the last degree examination. In Greek: "Euripides and his Relation to the Religion of his Time." In Latin: "The Attitude of the Roman Government to Christianity from Nero to Marcus Aurelius." In English: "The Anglo-Saxon Riddles"; "The Relation of Chaucer to Chivalry"; "The Influence exercised by the Development of English Prose and Literary Criticism upon the Teaching of the Vernacular Tongue and Study of Literature in English Schools." In Welsh: "The Poems of Iorwerth Fynglwyd"; "The Affinities of Italic and Celtic"; "The Poems of Bedo Brwynllys." In French: "La Muse Française et l'École Romantique"; "Ducis and de Vigny considered as Interpreters of Shakespeare"; "The Influence of Ossian on the Chief French Writers of the Romantic Period." In Hebrew: "Hebrew and Jewish Sources of the Quran." In history: "The Church in the Reign of Edward I., with special reference to the Register of Archbishop Peckham"; "William the Marshal." In economics and political science: "Transport Facilities in the South Wales Coalfield"; "The Changes in the Numbers of Agricultural Labourers and in their Wages and Efficiency during the last Fifty Years, and the Causes of these Changes, with special reference to Wales."

A HIGHER elementary school has been opened at Pontycymmer, Garw Valley, in the county of Glamorgan, by

Sir John Rhys, principal of Jesus College, Oxford. Sir John said: "The Glamorgan Education Committee has built this school for those parents who are unable to give their children the full course at the county schools. The school will be beneficial to the children of working men, and I readily understand that it will be beneficial to the intermediate schools. It is not to the advantage of the intermediate schools or any other schools to have a number of pupils who can only go through a portion of the curriculum; and, on the other hand, to go through a portion only of the curriculum cannot be very good for the children or so good as a shorter curriculum carefully thought out and made to fit in with the time and attention the pupils can give to the subjects to be taught."

AT a meeting of the Monmouthshire Education Committee Dr. Rocyn Jones, medical officer, made recommendations with respect to structural alterations to the Aberbargoed School, which is designed on open-air principles, especially as to roof and windows. He pointed out that there would be a further improvement in the condition of the children if they were supplied with a cup of hot milk at 11 a.m. each day. It was decided to carry out the recommendations, and to apply to the Board of Education to spend £20 in providing the hot milk.

IT is stated that in Glamorgan, since the County Council assumed control of education in 1904, thirty-one new schools have been opened, accommodating 6,782 scholars at a cost of £107,000, while thirty-nine new schools have been decided upon at a cost of £160,000.

THE Monmouthshire Education Committee has set itself to the encouragement of school gardening in connection with the elementary schools. The county horticultural lecturer not only offers theoretical lessons, but also gives practical demonstrations to the boys, who are required to work with the spade and hoe under his direction. The number of schools under the committee taking the subject is now twenty-three, although the subject is not compulsory. The classes are composed of boys between the ages of eleven and fourteen, and their work is subject to the inspection of H.M. inspectors from the Board of Education. Fourteen boys compose a class, which is held for at least one hour a week, sometimes two. The Board of Education allows a grant of 2*s*. per boy for every twenty practical lessons, up to 4*s*. per boy per annum. Sometimes waste land is taken, broken up, and cultivated; sometimes a piece of grass field is trenched. Each boy is ordinarily allowed a couple of perches to operate upon, and is allowed to take away the results obtained. The scheme seems to be very successful.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Exercises in French Composition. By P. G. Marique and H. B. Gilson. vi+166 pp. (Ginn.) 2*s*.—The first part contains a number of anecdotes, poems, &c., each followed by questions on the subject-matter and on the grammar, and a section entitled "Composition," in which the student is asked to give a *résumé* of the piece, and is also presented with a number of questions that have nothing whatever to do with it. The second part consists of subjects for composition, and here (as in the rest of the book) the Transatlantic origin of these exercises is obvious. What are English pupils to make of such subjects as *Le Quatre Juillet, Les Chemins de fer Américains,* or *Les Présidents populaires des États-Unis?* The authors also supply notes on the text, a grammatical appendix, and French-English and English-French vocabularies. We are fortunately already supplied with several better French composition books on this side of the water.

Graduated French Reader. First Year. First Part: Anecdotes and Tales. xvi+55+61 pp. (Williams and Norgate.) 1*s*. 6*d*.—This is the fifteenth edition, "thoroughly revised and remodelled." The changes appear to consist in the division of the two older volumes into four parts, and the addition of an appendix containing questions. There is also a long preface, the views expressed in which we do not propose to discuss. The book before us appears to be intended for the first term's work in French, and we doubt whether any class could get through it in the time. Judging from the vocabulary (which is not even complete), the text contains some 2,400 words, which is an enormous number for the first term's work. The footnotes consist mainly of translations; in some cases words given in the vocabulary are also translated in the footnotes. As for the appendix, six pages of exercises to fifty-six pieces is a very scanty allowance; it may be added that the printing is careless, a number of accents, hyphens, and signs of punctuation being faulty or omitted. The author tells us that the book has had a brilliant career; we doubt whether it has a future.

Exercises in German Grammar and Word-Formation. By Walter Rippmann. xvi+144 pp. (Dent.) 1*s*. 8*d*.—Prof. Rippmann has done well to add this little volume to the Modern Language Series which he edits, and we commend it to the notice of the reformers. The principle of reform is consistently carried through, and the mother tongue is conspicuously absent from the text, but some useful hints are supplied to the teacher in the introductory pages, which are in English. The arrangement of this book is satisfactory. It is not so much a formal grammar, as a phrase-book of applied rules and a conversation manual on methodical lines, and it should act beneficially on the work of a class, provided the teacher can himself handle the language with the utmost fluency. Not the least important part of the book is the division devoted to word-formation, and it is pleasant to record that this portion of the subject is not neglected, for personal experience leads us to the view that some period of a translation or grammar lesson on reform lines should be spent in developing the *Sprachgefühl* of the class by drill of this nature. The concluding pages contain a summary of grammatical forms and paradigms. It is not often that we catch an editor of Prof. Rippmann's acumen tripping, but we are obliged to confess that the verbs *wissen* and its stem-forms seem to have escaped his notice.

Labiche et Martin, La Poudre aux Yeux. Edited by B. W. Wells. vi+111 pp. (Heath.) 1*s*.—This time-honoured play has once more been edited, no better and no worse than in several previous editions. The text is nicely printed with hardly a mistake, the notes are not aggressively American (though such spellings as *labor, pretense,* and *check-book* will do our pupils no good), and there is a good vocabulary—for those who think an easy play like this needs a vocabulary.

Classics.

The Iliad of Homer. IX. and X. Translated by E. H. Blakeney. 212–276 pp. (Bell's Classical Translations.) 1*s*.—This volume is of the same description as those we have already noticed. The style we have discussed before: in the notes we see the same odd mixture of good and trivial. Quotations from English literature are always a

useful comment on a classic: and here are many. But there are some quotations which are commonplace or useless, as the commonplaces on death (p. 229). The phrase οὖθαρ ἀρούρης (p. 220) probably means the rich land, the sense of udder being secondary in οὖθαρ. And why should the allusion to the north-west wind from Thrace (p. 212) imply "an inhabitant of Asia Minor" rather than one who was describing a war in Asia Minor?

Venerabilis Bedae Historiae Ecclesiasticae Gentis Anglorum. Liber III. Edited, with Introduction and Notes, by C. S. Wallis and C. H. Gill. 88 pp. (Rivingtons.) 1*s.* 6*d.* net.

Bede's Ecclesiastical History of England. Book III. Translated by A. M. Sellar. 133–212 pp. (Rivingtons.) 1*s.* 6*d.* net.

These books are meant for the Universities' Preliminary examination. The Latin text is Hussey's, with a few variants; it has a short but good introduction, a glossary of unusual words, an index of names, a genealogical table, and a few hints for study; a few useful notes are at the foot of the page. Miss Sellar's translation, which appears to be part of a larger work, has a map and other notes, chiefly geographical. Both books are well done, and we hope that they may direct attention to this interesting work.

Cicero de Finibus. With Introduction and Commentary by W. M. L. Hutchinson. xxxii+238 pp. (Arnold.) 8*s.* 6*d.* net.—This book makes a modest pretension, and avows itself to be based on Madvig. It is, however, both more and less than Madvig. It takes little account of Madvig's many "philological" notes, and it amplifies the explanations of the philosophy to suit less learned readers. Miss Hutchinson has also had the advantage of many contributions made since Madvig's day to the study of later Greek philosophy. As a whole, the notes are few, and they are nearly all practical, although now and then they seem to be unnecessary. Thus the common idiom "quod se delectari dicat" (p. 5) ought not to need explanation: if it did, rather more is wanted than the editor gives. The chief merits of the notes lie in the clear explanation of philosophical parts, with numerous quotations given in full. The introduction is also good, and practically useful. Miss Hutchinson does not regard Cicero as a good philosopher, but she thinks more highly than most of his powers as an expositor; she thinks he represents his originals faithfully. The paragraphs on the systems of Zeno, Antinous, Epicurus, the Cynics and others, are all too brief. Miss Hutchinson has produced a book which will certainly be useful to learners; and it is the only edition of "De Finibus" in English. When will Dr. Reid give us his?

Theophrasti Characteres recensuit Hermannus Diels. (Scriptorum Classicorum Bibliotheca Oxoniensis.) xxviii pp.; text not paged. (Clarendon Press.) Cloth, 3*s.* 6*d.*; paper, 3*s.*—This text is very welcome. No other convenient and well-printed text of Theophrastus exists; and no other edition of any sort, that we have seen, gives the MS. readings. The text, as all scholars know, is in a bad state: Diels has not cleared it up, but he has done much towards improving it. His critical introduction is most valuable. We can cordially recommend this book to students.

Hellenica Oxyrhynchia cum Theopompi et Cratippi Fragmentis. Edited by B. P. Grenfell and A. Hunt. (Scriptorum Classicorum Bibliotheca Oxoniensis.) viii pp.; text not paged. (Clarendon Press.) Cloth, 4*s.* 6*d.*; paper, 4*s.*—Another volume of the Oxford Texts contains the newly discovered historical fragments from Egypt; it was a happy thought indeed to include the fragments of those writers to whom the fragments have been by several scholars ascribed. There is little to say about the fragments themselves, which are already well known: the critical notes are a welcome addition, as summarising the work of many scholars upon the text. The fragments already known of these two historians have been rearranged, re-edited, and enlarged: in itself a useful piece of work. This book will be indispensable to the historian.

English.

(1) *Tales of the Greek Seas.* By Andrew Lang. viii+104 pp.; illustrated. (Longmans.) 2*s.* *Tales of Troy.* By Andrew Lang. viii+104 pp.; illustrated. (Longmans.) 2*s.* (A cheaper edition, 1*s.*, is also published.)

(2) *Fairy Poetry.* Selected by R. S. Bate. xi+135 pp. (Bell.) 1*s.*

(3) *The Little Duke.* By C. M. Yonge. 158 pp.; illustrated. (Bell.) 1*s.*

(4) *Deeds that Won the Empire* and *Fights for the Flag.* By W. H. Fitchett. 160 pp.; illustrated. (Bell.) 1*s.* each.

(5) *The Best Letters of Horace Walpole.* Edited by A. D. McMahan. 304 pp. (Heinemann.) 1*s.* 6*d.* *The Best Letters of Lord Chesterfield.* Edited by E. G. Johnson. 302 pp. (Heinemann.) 1*s.* 6*d.*

(6) *Tennyson's Enid* (1859). Edited by C. B. Wheeler. viii+56 pp. (Oxford University Press.) 1*s.* 6*d.*

(7) *Selections from Hakluyt.* Edited by the Rev. A. E. Hall. xi+136 pp. (Bell.) 1*s.*

(8) *Dramatic Scenes from English Literature.* Selected by F. Johnson. viii+178 pp. (Arnold.) 1*s.* 6*d.*

(9) *A Pocket Lexicon and Concordance to the Temple Shakespeare.* Prepared by Marian Eduardes. viii+274 pp. (Dent.) 2*s.* 6*d.*

Mr. Andrew Lang will be known for many things; and among them is the popularisation of Homer. "Tales of the Greek Seas" and the "Tales of Troy" (1) are attractively bound, well illustrated, and the English is inimitably good, such as Mr. Lang knows how to write—or edit. The prefaces are too short for us; but the children will skip them. We suppose Mr. Lang has never seriously aimed at the immortal crown of Hawthorne; but it is the children who have given the "imprimatur in saecula saeculorum" to the "Pilgrim's Progress" and the "Tanglewood Tales," and to "La Belle au Bois dormant."

A book of "Fairy Poetry" (2) is on rather fresh lines: it contains much that is quite new to the ordinary anthology, and is by no means so simple as its title would suggest. Girls in the sixth forms would appreciate it. We always welcome reprints of "The Little Duke" (3) or of Mr. Fitchett's books (4); indeed, if Messrs. Bell would issue these semi-classics, loaded with illustrations and in post octavo or quarto, we should think they would have a great sale; illustrations peppered over the pages are, however, a necessity.

"The Best Letters of Walpole" and "The Best Letters of Chesterfield" (5) were really wanted, though perhaps, in the latter case, not for schools. The preface to the Chesterfield letters is brilliant. Tennyson's "Enid" (6) is a graceful volume with a good introduction, which the editor prints at the beginning and tells us to read at the end. His advice is good. We see no reference to the immortal Griselda; and it would be a very good thing if publishers (the great houses) would induce their editors to tell classes *how to read a classic. Teachers require to be told as well as pupils.*

"Selections from Hakluyt" (7) are always welcome: but we must protest against any meddling with the spelling; it is like dragging the ivy off a ruin. Miss Johnson has followed up her "Dramatic Scenes from History" with "Dramatic Scenes from English Literature" (8). We presume these scenes are intended for the stage; if so, directions and stage-plots should be added. In any case, the scenes make good reading and encourage the dramatic sense which exists in every child until school kills it.

A warm welcome ought to be given to Miss Eduardes' pocket lexicon to Shakespeare (9); very few of us can afford Schmidt. It is small, of course, but it is good; and in another edition probably a freer use of abbreviations would allow more material. The illustration on p. 118 is surely annotated wrongly; is it certain that the figure is a "harpy" or that the smaller figure is a "lady"? Perhaps someone will induce Miss Eduardes to do a concordance to the Elizabethans apart from Shakespeare.

History.

Points and Puzzles in Modern History, 1492–1905. By J. S. Lindsey. 64 pp. (Cambridge: Heffer.) 3*s*.—This volume contains within a single cover two little books, both of which have been previously published, viz., "Salient Points in Modern History" in 1905 and "Fifteen Hundred Grouped Questions on Modern History" in 1907. Since both cover the same period in general European history, it has been thought well to issue them together in a durable binding. The "Salient Points" consist of scheme of study, lists of books (drawn up with admirable judgment), selections of notable topics for special investigation, hints for revision, and a set of synoptical date-charts each covering half a century. The "Fifteen Hundred Questions" are partly original, partly selected from university and Civil Service examinations. They are grouped, some of them, under such topical headings as "politics," "economics," "maritime history"; others according to periods—*e.g.*, 1492–1503, 1503–1518. These questions, carefully chosen and judiciously classified as they are, should prove to be of immense service both to teachers and to candidates for the higher examinations.

A Perspective History Chart. (Frowde.) 8*s*. 6*d*. net.—This novel history chart, which is intended to impress upon the eye of school children the relative duration of historic eras, has apparently been suggested by the motto from Longfellow which is placed at its head: "Through the corridors of Time." It represents a long corridor or tunnel in perspective, with the centuries marked in gradually diminishing bands down its length until they fade away into the distance of prehistoric times. On these successive century-bands are printed a few of the leading names and events which give distinction to the successive eras. The strong and peculiar feature of this chart is that, by means of perspective, it represents three dimensions instead of the two of the ordinary history map. Hence it is able to depict as no other chart does the way in which the more remote centuries of antiquity fade away into darkness and oblivion. For the more recent periods of history, however, it is not so satisfactory as the ordinary time-chart.

The Teaching of Civics in Public Schools. By C. H. Spence. 24 pp. (Bristol: Baker; and London: Simpkin, Marshall.) 1*s*. net.—This is a paper read at the Bristol Conference of the Parents' National Educational Union in July, 1908, in which the author, the head of the modern side at Clifton College, pleads for the education of our public-school boys in imperial and local politics (not in the party sense of that word) in order that they may be prepared to take part in the government of the country other than in India and Africa, and gives a syllabus of a three-term course, which, to judge by the preface provided by Mr. David, the headmaster of Clifton College, is the result of practical experience. There is also a bibliography of the subject. It seems an ambitious programme; but it is much to be desired that such a course should be given to the elder forms in our public schools.

Junior History Examination Papers. By W. O. P. Davies. 72 pp. (Methuen.) 1*s*.—Each page contains ten questions, one on "Terms and Definitions," one on "General Questions," the other eight being distributed between 55 B.C. and the present time on a uniform plan. The book may be useful to some teachers; but we cannot quite understand how it is to be used, and some of the questions are vague, while others connect together things without any relation.

History Day by Day. By F. W. Green. vi+366+x pp. (Stead's Publishing House.) 3*s*. 6*d*. net.—An event mentioned for every day in the year, a brief account of the circumstances of that event, and a quotation apropos of the same from some standard writer, such are the contents of this book, together with a preface by the compiler, an introduction by Mr. W. T. Stead, an alphabetical index of events, and an "index of the books referred to." The events are not confined to English history, though naturally most of them are.

Geography.

New British Empire Globe. (Philip.) 7*s*. 6*d*. net.—This globe is small and handy enough, being 8 inches in diameter, for use in practical exercises by one or two pupils; it is at the same time clear enough for purposes of class demonstration. The moderate price places it well within the reach of all. The Empire and the All-British Cable Route are shown in the familiar red colouring, while the more important world features are marked clearly. A globe of this description is extremely useful for that form of practical exercise in geography which consists in finding cross distances: first, from port to port, some of the distances are marked; later, from capital to capital, or from great city to great city. In the all-important matters of shape and comparative size a globe of about this size should be frequently handled by the pupil, and to prevent aimless handling it is well to set a definite exercise. One suggestion might be made—that the main trans-continental railway lines should be marked.

Peeps at many Lands. New Zealand. By P. A. Vaile. 88 pp. (Black.) 1*s*. 6*d*.—An excellent little book, this, with its fascinating coloured illustrations, its naturally worded descriptions of boy and girl life in New Zealand, and its insight into colonial work and play. Surely no child will consider this a dry lesson-book. It provides a clear and vivid impression of this corner of Greater Britain.

Bathy-orographical School Wall Maps—Asia; Africa. 42 in. × 50 in. (Johnston.) 12*s*. each.—These are two of the latest of Messrs. Johnston's new series, and they may be thoroughly recommended. They are clearly coloured in the now familiar greens, browns, and blues, and they do really—in the words of the publishers' advertisement—"present to the pupil an intelligible and accurate picture of the configuration of the country." The tints chosen are not quite so "contrasty" as some we have seen, but they are sufficiently strong to bring out the main physical

features—*e.g.*, in "Asia" the great north plain, the fan-spreading mass of eastern highlands, and the prominent coastal river valleys which have left their mark on the whole history of mankind; or, again, in "Africa" the great eastern plateau, the region of the lakes, and the diagonal rocky ridge across what one used to regard as the unbroken sandy plain of the Sahara. The names inserted, though for the most part well chosen, might, however, with advantage be lightened in point of number. We counted more than sixty names of physical features in the small area south of lat. 20° S. in the map of Africa—*i.e.*, in a space some 8 inches by 7 inches. It is obvious that for teaching purposes less than half these are required; and every name detracts from the clearness of an orographical map. In fact, the system of printing names in a grey tint practically invisible to the class would, we think, improve these wall maps. Towns of importance are indicated in this way, and with initial letters only. As a result, they do not interfere with the reading of the map in any way. For the rest, the maps are up-to-date—witness the insertion of the *Trans*-Himalaya and the two-fold appearance of Lake Chad—are published at two prices (9*s.* in sheets, 12*s.* mounted on rollers and varnished), and make excellent guides to a right use of the boys' atlases.

The Voyages of Drake and Gilbert. Edited by E. J. Payne and annotated by C. R. Beazley. lxxii + 134 pp.; maps. (Clarendon Press.) 2*s.* 6*d.*—These "select narratives" from the "principal navigations" of Hakluyt are issued uniform with the "Voyages of Hawkins, Frobisher, and Drake," while the long introduction is taken from the larger selection, "Voyages of the Elizabethan Seamen," edited by Messrs. Payne and Beazley some two years ago. Both narratives are well-known stories of the famous pioneers. There are two of Drake: the first, his voyage round the world, 1577–1580, is told by Francis Pretty, one of the great sea-dog's "gentlemen of arms," and the second, his plundering raid on the Spanish main, 1585–1586, was begun by Walter Biggs, a captain of musketeers (who died after the Cartagena exploit), and completed by one of his comrades. Gilbert's voyage of 1583, with its famous precedent for British colonisation, is told by Edward Hayes, captain and owner of the *Golden Hind* itself. These are, again, books for the school library as well as for the class-room.

Mathematics.

The Elements of Geometry in Theory and Practice. By A. E. Pierpoint. Parts I.–III. xvi + 387 pp. (Longmans.) 3*s.*—The aim of this book is to provide a course in the elements of geometry (covering Euclid, Books I.–IV., with additional matter) embodying those recent reforms in geometrical teaching that have been generally approved and adopted. Each part consists of three sections: (i) an experimental section; (ii) a theoretical section; (iii) a practical section; the order of the theorems is based on the Cambridge Schedule. The experimental sections, especially that of Part I., are on the whole very good, though we think it unwise to base a conclusion, marked "learn this by heart," on a single experimental result, as is sometimes done. In the theoretical sections great care has been devoted to the presentation of the theorems, and a plentiful supply of riders, easy and hard, is given. The practical sections, occupying the unusual third place in each part, are used to a great extent as extended exercises on the theorems. The constructions are generally those of "practical geometry," and are followed by a rigorous proof. The double nature of "locus" is well explained, but is not adhered to on p. 158 in the introduction to graphs of linear equations. The forms of the simple solids and their nets are given. The section on tangents is slightly confusing, owing to the two methods of consideration being given. Hints for the solution of the harder exercises are given at the end of the book; these, if anything, are too full. The book is one to be recommended as a satisfactory course of elementary geometry; it is marred, however, by the cramped type used, which makes it difficult to "read," especially in the proofs of the theorems, where the symbols of abbreviation do not match the type.

Notes of Lessons on Arithmetic, Mensuration, and Practical Geometry. Vol. ii. By C. W. Crook. vi + 170 pp. (Pitman.) 3*s.*—This is a valuable collection of notes of lessons on elementary mathematics. It is of a comprehensive character, amongst the subjects dealt with being graphs, stocks, annuities, logarithms, decimals, simple and quadratic equations, practical exercises on triangles, circles, parabolas, ellipses, mensuration of some of the simpler solids, and map projection. Each lesson begins with an indication of the apparatus required and of previous work leading up to the subject to be considered. Questions and oral work designed to arouse the interest and secure the co-operation of the class are next suggested, followed by an exposition of the new matter to be imparted. Practical exercises, a blackboard scheme, and suggestions for additional lessons and problems conclude each section. We regret to see that the author recommends the reversal of the multiplier in abbreviated multiplication, our experience being that this method only leads to confusion and mistake. We can say, however, that the inexperienced teacher could not have a better guide in the construction of his lessons, and the most experienced one will find much that is stimulating and helpful.

The Intermediate Arithmetic. Edited by J. L. Martin. iv + 124 pp. (Harrap.) 1*s.*—This seems to us a model of what a book on elementary arithmetic should be. It is designed to introduce children whose knowledge barely extends beyond the four fundamental rules to fractions and weights and measures. The characteristic features are the carefully graduated exercises, well adapted to develop the power of accurate calculation while not wearying by unnecessary complexity or length, the numerous illustrative diagrams, and the practical exercises in plane and solid geometry, measuring and weighing, which cannot fail to make the children realise the importance and use of arithmetic in everyday life. We note also with interest the symbolic exercises and the page or two on graphs.

A General Text-book of Elementary Algebra. By A. E. Layng. xii + 464 + liv pp. (Blackie.) 4*s.* 6*d.*—This work forms a very complete text-book of elementary algebra up to and including the exponential theorem. The first sixty-seven pages provide an introductory course, in which the primary object is to teach the beginners to regard the operations of algebra as generalisations of those with which he has become acquainted in arithmetic. The author has been at great pains to explain every point which in his experience as a teacher he has found to present any difficulty, and also to ensure a perfect understanding of the various technical terms employed. Graphs are introduced almost at the beginning, and are used freely throughout. The purpose of a graph is to convey to the mind by means of a visual representation a knowledge of the properties of the function under consideration, and the conception of an ideal graph has to be formed which stands in the same relation to the actual drawing as the ideal triangle to its representation on a sheet of paper. Too much graph work is mere plotting; but no student

who uses this book can fail to attain the true point of view. The examples are very numerous, a large number of them relating to geometry. Tables of logarithms and anti-logarithms are included. It seems altogether a thoroughly satisfactory work.

A Brief Course in the Calculus. By W. Cain. x+280 pp. Second edition. (Blackie.) 6*s.* net.—The author has been successful in writing a book which sets forth simply and clearly the fundamental principles of the differential and integral calculus. Worked examples are numerous, and should prove of great assistance to the ordinary student. The utility of the calculus is illustrated in applications to geometry and mechanics, but those discussions of the properties of plane curves which until recently occupied so much space in text-books are here omitted. The work may be commended to anyone who desires to obtain a sound knowledge of the essential features of the subject.

Science and Technology.

Science in Modern Life. Edited by Prof. J. R. Ainsworth Davis. Vol. iii. ix+187 pp. (Gresham Publishing Co.) 6*s.* net.—In this volume Mr. J. H. Shaxby deals with sound, light, magnetism, and electricity (113 pages); Dr. H. J. Fleure writes on general biology (41 pages); and Mr. J. M. F. Drummond begins the description of botanical science (26 pages). Mr. Shaxby's contribution is an admirable statement of the main problems and directions of progress of modern physics. Both in the attention given to subjects of purely scientific interest, such as anomalous dispersion and the shape of the earth, and also in the account of metallic filament electric lamps, wireless telegraphy, colour photography, and the phonograph, the article is just what is required in a work of this kind. The teacher of physics who brings the contribution under the notice of his students may rest assured that all those who are really interested in their work will be stimulated by what Mr. Shaxby has written. Dr. Fleure's article is concerned chiefly with the cell, its multiplication by cellular division, and reproduction by conjugation or sexual process. The subject is a difficult one, and its true bearings upon problems of life can be comprehended only by students familiar with practical work in biology; but given this foundation the article may be read with profit. Mr. Drummond is concerned in the present instalment mainly with ecological factors and types of vegetation. In character the article differs greatly from that by Mr. Shaxby, being concerned more with details than with broad facts and views; but perhaps the remaining portion will be more distinctive of science in modern life.

A First Course in Biology. By L. H. Bailey and W. H. Coleman. xxv+204+224+174 pp. (New York: The Macmillan Co.) 7*s.* 6*d.*—The three sections of this work deal respectively with plant biology, animal biology, and human biology. They really form three separate books bound up in one volume, and it is somewhat to be regretted that the pages and illustrations are not numbered consecutively, so as to emphasise the unity of plan which really underlies them, and at the same time to facilitate reference. We have learnt to expect from both authors—who are pioneers in the organisation of American nature-study—a distinctive freshness of treatment in school biology; and the present work is in their best style, not only in its descriptive and explanatory passages, but also in the countless exercises which it contains for observation and reasoning on the part of the student. The use made of pictorial illustrations in connection with these exercises is a novel and original feature of the course, and is full of suggestions for teachers. It is made possible by a wealth of drawings, covering so wide a field that the volume is at the same time a text-book and an atlas of natural history.

Botany for Matriculation. By F. Cavers. viii+568 pp. (Clive.) 5*s.* 6*d.*—Although Prof. Cavers has freely used his "Plant Biology" and "Life Histories of Common Plants" (already commended in THE SCHOOL WORLD) in the preparation of the present book, a large portion of the text is new. The examination candidates for whom the book is intended primarily may perhaps find the completed course of work disconcertingly full, but teachers will welcome it for many reasons. The prominence given throughout to ecology and physiology, the very exact instructions for experiments and the examination and sketching of specimens, and the constant insistence on the student's personal contact with the fundamental facts of the science, make the book a sound introduction to botany. We have noticed few slips; but the definition of an oil on p. 89 is not altogether satisfactory, and "perigynous" on line 13, p. 279, ought to be "epigynous." The book contains 179 helpful illustrations.

Open Air Nature Books. I. The Hedge I Know; 77 pp. *II. The Pond I Know*; 78 pp. Edited by W. P. Westell and H. E. Turner. (Dent.) 8*d.* each.—The idea of this series—that each book shall "set out the salient features of its environment, its geology and its animal and vegetable inhabitants"—is distinctly good. The treatment is chatty and likely to appeal to children, and the illustrations—especially the coloured plates—are delightful. In Book I. it is stated that the green colouring matter of leaves can produce starch. This is the worst mistake we have noticed, but one or two other statements also need modifying.

In the Open Air. By J. Eaton Feasey. 120 pp. (Pitman.) 1*s.* 6*d.*—This book is a series of outdoor lessons in arithmetic, mensuration, geometry, &c., which many teachers will find useful. It is thoroughly practical and interesting, and should do something to break down "the old idea that schooling is an affair of the inside of a building."

WE have received a copy of their "Catalogue C" (3*d.* post free) from Messrs. Flatters and Garnett, Ltd., 32, Dover Street, Manchester. The particulars given of collecting apparatus, nature-study appliances, cabinets, museum glassware, glass-top boxes, &c., are worthy the attention of naturalists.

Miscellaneous.

The Red Code (1909). English and Welsh editions combined. The N.U.T. Edition, 1909. By J. H. Yoxall and Ernest Gray. xlviii+418 pp. (*Schoolmaster* Publishing Co., Ltd.) 1*s.* net.—This extremely useful and well-edited handbook contains all the statutory and departmental regulations habitually required by local education authorities, governing bodies, teachers, and others. In addition it is provided with illuminating annotations by the editors; and no educational worker can afford to be without a copy of the volume. To quote the full title of the book is satisfactorily to indicate its scope: "containing the official regulations for public elementary, secondary, and technical schools: schools of art and other forms of provision of further education: regulations for the preliminary education of teachers: training colleges and the training of teachers: Education Acts, 1902–1907: Children Act, 1908 (education sections): with official decisions and other information necessary for local education committees, teachers, and managers of schools."

The "Epicure" Directory of Schools and Teachers of Domestic Economy. 238 pp. (Eyre and Spottiswoode.) 2*s.* 6*d.*—The directory compiled by the editor of the *Epicure* should prove of service to teachers of all branches of domestic economy, giving as it does full information as to certificates, training schools, and official regulations, in addition to a comprehensive list, in alphabetical order, of principals and officials of schools and teachers of domestic subjects.

Short Plays from Dickens. Arranged by Horace B. Browne. (Chapman and Hall.) 2*s.* 6*d.* net.—These twenty short plays, or rather scenes from Dickens, have been prepared with a special view to school and other amateur performance. They are well adapted to that end in regard to their brevity and their close adherence to the original text. The author has not much stagecraft, and in some cases a little more dove-tailing would have been advisable in order to make clear the points of the plot, which is almost assumed to be known by the audience. It should be remembered that amateurs are weakest in the stage business which enables professionals to carry off successfully an inferior piece. Moreover, to act Dickens really well requires almost the genius of Dickens himself. Therefore every assistance should be given to the amateur actor in the matter of *dialogue*. They may at least be word-perfect, and the better the style of the dialogue they utter the less will their technical demerits as actors appear. Mr. Browne here and there only sketches in the scene, and leaves his players to fill in gaps in the story for themselves. Only very clever amateurs would succeed in this. Nevertheless, the adapter's enthusiasm and knowledge of the subject have produced a varied collection of scenes, including two from "Nicholas Nickleby" ("Miss Squeers' Tea-party" and "The Gentleman Next Door"), three from "David Copperfield," three from "Martin Chuzzlewit," three from "Bleak House," and so on, by means of which amateurs may spend many an interesting "Dickens" evening.

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in* The School World *will be submitted to the contributor before publication, so that the criticism and reply may appear together.

The Boundaries of School Geography.

Mr. B. C. Wallis's letter in the October issue of The School World raises questions upon which individual opinions have been expressed frequently, but without leading to a conclusion of general acceptance. It is as difficult to define the limits of geography as it is to mark the boundaries of any other science. Teachers who are free to plan and carry out courses of work, uninfluenced by conventional standards or examinational results, should not be troubled about defining the scope of their subject provided the instruction is true to the principle of scientific method. In school geography, however, such opportunities are rare; and a touchstone seems to be needed which will enable the work of geography to be distinguished from that of other sciences.

As a general principle, I am inclined to think that only those facts and phenomena should be considered which have some relation to the existence of Man upon the earth. Without a criterion of this kind, geography—and particularly geography of the present day—tends to become a miscellany of meteorology, astronomy, physics, geology, history, economics, and various other branches of science. "Man and Nature, Man in Nature, not Man alone or Nature alone," says Dr. Murray Butler, "are the true subjects of interest and of study in geography. So presented, it lays the basis for systematic study of the descriptive sciences on one hand and of Man's political and economic development on the other." Dr. H. R. Mill takes much the same view in the "International Geography," his definition being: "Geography is the exact and organised knowledge of the distribution of phenomena on the surface of the Earth, culminating in the explanation of the interaction of Man with his terrestrial environment."

Such a definition as this gives geography a distinctive position among the sciences. From the focus occupied by Man, views may be taken along the highways of any sciences; but when we leave the centre to journey down a particular road the periscopic outlook of the geographer is impossible, and we enter the domain of another science. Remembering that the adult has a more extensive horizon than the child, attention is first directed to near and obvious features; and as the mind grows, details are filled in and more distant views obtained. We must not start, however, with facts in physics, astronomy, geology, or any other science, and travel to the focus of geography, but must look at the points from the focus at all stages of the instruction.

A few instances will serve to illustrate the application of this guiding principle. The variations in the lengths of day and night in different latitudes and seasons have a direct bearing upon Man's life and activities; and a knowledge of them belongs to geography. From a geographical point of view, these variations are the causes of which abundant consequences can be found upon the earth's surface; and, geographically, I do not consider it essential to show that the variations are due to the rotation and revolution of the earth with its axis inclined to the plane of its orbit. Similarly, the seasonal movements of the heat-belts upon the earth are geographical consequences of the seasonal changes of altitude of the sun; but the exact explanation of these changes seems to me to belong to astronomy rather than geography.

Of course, there is no objection to attempting to arrive at an ultimate cause in this or any other cases; but my point is that, geographically, it does not matter whether the sun revolves around the earth or the earth around the sun. More important than the explanation is a knowledge of the facts obtained by observation; for not until such facts have been accumulated is it possible to understand the validity of the theory to explain them. Teachers may try to explain the causes of the tides, but the most they can do is to refer the phenomena to the differential attraction of the moon and sun. This statical theory, however, is altogether unsatisfactory, and gives no true idea of the action of tide-generating forces. I cannot see, therefore, why the subject should be dealt with in the geography lesson, which is quite sufficiently occupied with the consideration of the influences and characters of tides and the relation of the movements to the apparent positions of the sun and moon.

It is very difficult to decide how far to look into meteorology in the geography course; but as a working principle I suggest again that only those facts be considered which affect Man. The meteorologist secures records of the factors of climate; the geographer considers how these records are related to the production of food-stuffs and to

population. The usual method is to describe in a systematic way isotherms and isobars, cyclones and anti-cyclones, sunshine and rainfall, winds and ocean currents, and other meteorological characters, and to leave the geographical significance of these matters almost unnoticed. The true method would seem to be an inversion of this process. What the geographer has to do is to find the meteorological conditions which are the determining factors of the existence of particular crops, vegetation, or industries of a district. When he knows these conditions, he should be able to predict where, other things being equal, the same result should be obtainable in other places. First should come the geographical fact, then the search for an explanation—meteorological or otherwise. The reasoning should not be, in the first place, from cause to consequence, but from consequence back to cause. It seems scarcely necessary to deal with the details of weather maps, except in so far as they increase interest. It is possible to know much about such meteorological matters, and yet know little of geography.

My remarks have already taken up so much space that the many other aspects of the questions raised by Mr. Wallis cannot now be considered. What is here urged is that in all stages of the geography course the starting-point should be truly geographical. If we begin with the principles of physics, chemistry, botany, geology and other sciences, and then lead up to their geographical application, we are making geography only a congeries of elementary portions of more systematised branches of knowledge. If, however, we start with the world or any part of it as it now is, and consider it from the point of view of the conditions, needs, and opportunities of Man, we are given a criterion by which we may discover whether the teaching is truly geographical or not.

Chichester. R. A. GREGORY.

THE letter of Mr. B. C. Wallis in the last issue of THE SCHOOL WORLD comes, I think, at a very opportune moment. The teaching of geography has developed so largely in recent years, and so much fresh light has been thrown on its educational value, that there now appears the danger of attempting to do too much.

For seven years I have been engaged in teaching this subject "on modern lines," and have had occasion to draw up schemes at different times; and the more I become acquainted with the great range of the subject the more difficult I find it to decide what to include in a four years' course, given two periods a week for the geography lessons. I hope, therefore, that Mr. Wallis's letter will lead to a full discussion, and that, as a result, some more or less definite syllabus may be arrived at. With regard to the points he raises, I beg to submit the following views.

In the case of mathematical geography, I think it very valuable that the movements of the earth, in so far as they affect length of day and night, seasons and time, should be gone into carefully, and pupils should also be made to realise that latitude and longitude are not "imaginary lines," but have a real meaning for anyone in any part of the globe. These questions I should not introduce until a year's work in geometry had been done.

Next, with regard to daily weather reports. The principles on which these are based should certainly be pointed out, but beyond this I do not think the teacher can do more than try to encourage boys to pursue the study for themselves by establishing a small meteorological station at the school and recording the results on a notice-board.

The question of how far to dip into the realm of geology is a difficult one. Personally, I think this part of the subject does not appeal to boys very much, and I make a practice of giving only a broad outline of the formation of the earth's crust, devoting more attention to the forces at work on the earth's surface. I sometimes go more into the question of rock structure and rock composition with pupils who have completed the ordinary course, and still devote part of their time to geography.

Lastly, as to the descriptive or scientific method of approaching the study of man's environment, I aim, so far as possible, at the happy mean, though I think I incline more to the scientific method, and should be inclined to give that method greater prominence in the actual teaching, hoping the boys themselves might feel sufficient interest in the subject occasionally to read some good descriptive work on their own account.

Even with the above limitations, I find it difficult to do all I could wish, and well-nigh impossible to do any such work as practical map-making or surveying; and the inevitable examination does not tend to minimise one's difficulties. W. E. ST. JOHN JENNINGS.

The Grammar School, Chesterfield.

The Teaching of History in Secondary Schools.

WITH the possible exception of English, there is no subject in modern secondary education so capable as history is of attractive treatment at the hands of a master, and yet many masters will agree with me when I say that the history classes are often the least interesting in the week. My object is to ask if something cannot be done to make the study of history more interesting to those we teach, and in the same measure a more effective instrument of education. The question is therefore largely a criticism of the modern methods of teaching it, and as the method of doing anything is necessarily conditioned by the object in view, let us see what object we have in view in teaching history.

Well, my own experience has been that the main object of all our teaching nowadays is to bring our boys into line with the requirements of examiners. I have not a word to say against public examinations, for they certainly give us a definite standard at which to aim, and thus prevent waste of time and misguided effort; but in some subjects, and notably in history, they tend to make us forget that the general culture of the students is by no means sufficiently met by a rigid adherence to the requirements of examiners. The general process at present would seem to be this: if the boys are going in for any public examination, they are drilled carefully in all the obvious questions bearing on a definite period. This is excellent from the examination point of view, but not from the educational, since neither imagination nor intellect enters into the process, but merely the mechanical memory. If the boys are not preparing for any public examination their plight is almost worse, for they are given a text-book, told to prepare a certain portion of it, and then questioned on what they have learnt. Anything more uninteresting and uninspiring cannot well be imagined; and yet history is capable of being made intensely attractive.

The master must first recognise that examinations are not an end in themselves, but that the real end of all his teaching is the education of his boys. He will then be unwilling that they should miss the development of mind which a deeper and a wider study of history produces. It may be necessary for the purposes of the examination that lists of names and dates should be committed to memory; but apart from this, let him use his discretion. History is a living thing, and, like all living things, all its parts are not equally important. Some parts are vital; some are very useful but not indispensable; others, again, can be dispensed with altogether. To apply this to our

subject, there are parts of history which everyone ought to know, and that as thoroughly as possible; and there are parts the only importance of which is that they are, as it were, a framework for the rest. Therefore let the boys be taken rapidly through the history of this country from the Pleistocene Age down to Peel. For this no text-book should be used, but the master should give the subject-matter to the class after the manner of a lecturer, remembering always that his audience consists of boys.

This brings me to the second point about the master—he must be an enthusiast about his subject. Only an enthusiast is capable, first of all, of preparing a summary of History from Palæolithic man to Robert Peel for boys of sixteen; and, secondly, only an enthusiast can put enough life and interest into such a summary as to make it worth his while to give it out in class. When every boy in the class has thus produced for himself a general framework of history, then is the time to specialise in what we have called the vital parts. For instance, the French Revolution and the Napoleonic Empire form between them the most important element in modern history, and their tremendous influence on England and the world calls for detailed treatment. This might well be one special period to be fitted into the general framework; and there are many others just as obvious. The essence of this system is the dispensing with text-books and the getting the boys to make text-books for themselves from what is given them in class. References to authors, plans of battles, maps of campaigns—all these should be given whenever possible; and the keenness and interest shown by the boys will be a peculiarly gratifying reward for any amount of trouble taken.

As I write, I think of a class of sixteen boys on which I tried this system. How keen they were about it all! How they followed enthusiastic and responsive across the flaming fields of Austerlitz and Marengo, over the groaning bridge of Lodi, or through the tumult of the nations at Waterloo. It was worth while giving hours to the preparation of these lessons if only to watch the kindling of the flame. It was not the orthodox method, certainly, for they were never required to work out the genealogy of Louis XVI. nor the sequence of ministries under George III. But there was, I submit, more educational value in following the career of the greatest of conquerors than there would have been in any system that confined its attention to the requirements of public examinations. If there is any faculty neglected by modern education, it is the imagination—the faculty that helps people to think for themselves; and if there is any subject that could remedy this defect, it is history in the hands of an enthusiast.

JOHN LOSTIFORD.

The Practice of Public Speaking.

I AM pleased to give some account of the Literary and Debating Society that was originated at the Warehousemen, Clerks, and Drapers' School, Purley, Surrey, during my headmastership. During a long scholastic experience I had observed that many Form VI. boys leave school without the slightest training in the correct elements of public speaking—*i.e.*, the practice of systematic oral composition in class and reading aloud. And, further, that so many men to-day—who would have valued this training—are shy at accepting requests even to propose or second votes of thanks on public occasions. The schoolmaster, eager for his percentage of examination passes, would grumble, no doubt, at this plan as a *loss* of valuable time; but part of this system, I claim, may be worked with advantage to every subject, because a fluency and ease of expression is secured that shows to advantage in paper work, and also some of the slur is removed from the schools by those who say, "Do you teach your pupils *to think* clearly and *to speak properly?*

As to the *modus operandi*, our meetings were held fortnightly during some portion of evening-study hours, because I had 206 boy boarders under my charge, and the preparatory work was useful occupation. There was great eagerness displayed to be possessed of the privilege of being present, although the admission was secured through a committee meeting under my guidance; and those who came knew the obligation of speaking, for on some favourite nights, when impromptu speaking was down, I extended the time until 10 p.m. and secured a few words from nearly every boy present.

Invited guests and friends often came from the neighbourhood on our big nights, and thus made up the number to at least sixty, as all boys of the Upper School—*i.e.*, Forms VI. and V.—not on prefect duty always came. The real officials were the boys themselves. I invariably attended the meetings in merely an advisory capacity as president, sitting by and guiding the boy chairman (aged about fifteen) in the ordinary rules of procedure. No names of members were allowed to be mentioned, and we endeavoured to keep all on the best Parliamentary method, referring to "the previous speaker," &c., or some such well-understood phrase.

The chief items of the programme of the last two sessions were: (*a*) "Is the Modern Stage Advanced?" This was chosen and opened by a budding dramatist. (*b*) "Are the Territorials Good for England?" Discussed by another Form VI. boy. (*c*) "Through a Paper Factory." A very clever sketch by a thoughtful lad. Here was a specimen evening's mental food for about two and a half hours, *plus* a vote of thanks to each opener.

Other good items chosen by the boys were: "The Olympic Games," "Pageantitis" (the president aided in the coining of this expressive word), "Through Huntley and Palmer's Biscuit Factory" (this paper was sent by request to the manufacturers, who greatly approved it), "Esperanto," "Will the Poles ever be Reached?" (there were two sides, an affirmative and a negative, on February 11th, 1909), and "Scouting for Boys." However, our two best meetings were the House of Commons evenings, with a boy "Prime Minister," boy "Speaker," and the necessary "Government" or "Opposition" members (a house of fifty, with each one a distinctive M.P.), even including "Socialists" and "Labour" members. An interesting little incident may here be mentioned. It was after the "Victor Grayson" incident in the House of Commons at Westminster, and, in view of our coming "House Night," the boys came to me and asked my permission to have the throwing out of "the House" of the boy who acted "Socialist." I was amused, but barred the request, because of the dignity and reverence due to "the King," who always attended the debates of his "faithful Commons." The "House of Lords" was represented by listening friends.

Our last "Prime Minister" made a clever speech of at least fifteen minutes on Foreign Affairs, which he had got up carefully in his leisure time by studying and thinking over the columns of the *Daily Graphic* that were on view on the school notice-board every day.

Finally, we finished our session by a public dramatic performance (by request) of the well-known "Private Secretary" that the president shortened for his twelve boy actors, and the result—including payment of the royalty fee of £5—was £24 profit for the Purley Cottage Hospital.

The success of these experiments came out in the public functions of the school, for on entertainment evenings in

our large and filled school hall, with 320 boys and girls present, and the gathering often swollen to 400 by an attendance of friend entertainers and visitors, two at least of the best boy speakers of the Debating Society would follow me by proposing and seconding votes of thanks on behalf of the young people themselves.

Two prefects have also addressed our Sports' Day attendances from the school pavilion at the close of the proceedings, and latterly, as practice makes perfect, I could suddenly call on some of the members of my Form VI. who could, without knowing whom I should name, with a facile clearness of speech thank the givers of our entertainments to the schools.

We also gained real and valuable aid from an M.P. at present sitting at Westminster; and many kindly Press notices of these experiments have appeared, because the system involved no undue strain on boys, often under fifteen years of age, and well occupied with school work and necessary duties. CHARLES B. GUTTERIDGE.

The London Matriculation Examination.

THE London Matriculation has never been a favourite examination with medical men, as the entrance examinations of other universities are easier to pass, and thus intending medical students are driven away from London. Mr. Wallis, the dean of the Charing Cross Hospital Medical School, made a distinct attack on the London medical degrees in his annual address on October 4th. But it may be asked whether an indecent competition between universities to gain students by lowering the standard of their examinations would ultimately lead to the good of learning, or even to the good of medicine. It is not unreasonable to expect a medical student to have some knowledge of his own language, elementary mathematics, another language, and two other subjects of his own choice, before beginning his professional studies. In fact, his two optional subjects may be chemistry and physics, which will also serve him in his first professional examination. If any advance is to be made in the learning of the medical profession so as to bring it to the level of the French and Germans, surely a high standard of entry should be maintained. What can be the value of a doctor who has scraped through the second-class College of Preceptors or the Scotch Educational Institute at a third or fourth attempt?

Still, the desire to maintain a high standard of entry to the medical profession—at least what is expected from the budding accountant or solicitor—should not blind us to some of the vagaries of the London Matriculation. A few years ago the French papers were reproached with being similar to acrostics, and with some justice. Now the English paper is becoming eccentric. The regulations say that "the paper will include questions testing general reading and knowledge of English books." This means, evidently, an acquaintance with English literature. At the September examination there were two questions out of a total of seven on this part of the subject. They ran as follows:

"(6) Write out fifteen or twenty lines of any famous speech from one of Shakespeare's plays, and describe the scene from which it is taken.

"(7) Classify and describe the most important periodical publications of the present day."

Hardly any candidate could fail to answer the former whether he had prepared his subject or not, whereas the latter surely demands special knowledge hardly to be expected from a boy of sixteen. If it were not known that the paper had to be prepared many months in advance, one might be inclined to believe it had been written hurriedly during the vacation. DE V. PAYEN-PAYNE.

National Home-Reading Union.

WE are sure that your readers will be interested to know that this session marks the coming of age of the National Home-Reading Union. The Young People's Book List just issued is the twenty-first of the series; and although the work of the Union is now well known throughout the country, we venture to ask for the freedom of your columns, not only to announce this interesting fact in our history, but also to acquaint your readers with some recent and important developments in our work.

The Union exists primarily to encourage the love of good reading, and, naturally, it regards its work in the schools as being of paramount importance. We do not propose to enlarge upon such a generally admitted fact as the supreme value of the habit of reading good books. We would rather for the present endeavour to put before you the other side of the question—the enormous harm done by the reading of bad and useless books. The Union has recently made an exhaustive investigation into the whole question of juvenile literature in this country, and especially with regard to the cheap journals which circulate among our schoolboys and young working lads. Like everyone else, it had been aware of the existence of the "penny dreadful," or "blood" as it is now called, but the magnitude of the evil was not realised until the inquiries above mentioned were made. Cheap boys' journals and so-called "comics" at a penny and halfpenny circulate by the million. They are replete with every kind of sensationalism; they make a feature of crime stories, and their absurdity and vulgarity is almost beyond belief. They invest the slang catch-phrases of the street and the music-hall with the dignity of print; and, in fact, anything more vitiating or more deadening to the active young mind of a boy it would be impossible to imagine. These papers are exposed for sale in every newsagent's shop in every town in England, and we venture to say that if any of your readers will look into these papers and investigate for themselves they will be astounded at their discoveries.

The National Home-Reading Union feels that the only successful method of meeting this great evil lies in providing for our scholars an abundance of good, healthy, and interesting books. This has been the object in view, not only in the selection of the books on our current list, but also in the magazines which contain articles dealing with the books. They are interesting and attractive. In addition, a new section has been introduced giving a list of books suitable for children of nine or ten years of age, the object being to interest children in our work at an earlier age than has hitherto been the case.

Then with regard to the Union's system of forming circles. It will generally be admitted that it is not sufficient to put books into the hands of children without giving them some training in the art of reading. Children have a habit of skimming a book rather than reading it with that care and attention essential to profitable reading. It is to prevent this vicious habit that the Union recommends the formation of circles, and for the same reason the Board of Education has strongly advised that these circles be formed in our schools.

By this method the book chosen is carefully studied, and not only are the ordinary difficulties of language explained, but the teacher also points out striking beauties of style and diction, the force of metaphors and imagery; the personal characters are exhibited, and the humour and pathos that occur commented on. Thus the scholar reads with a mind keenly alive to the thought and style of the book, and it becomes a real and living thing of supreme interest to him.

We shall be very glad to give further information about our work amongst children (and others), and would appeal to all who are interested in and realise the value of it to co-operate with us in it in one or more of the many ways in which co-operation is needed.

J. B. PATON (Hon. Secretary), A. M. READ (Secretary).

12, York Buildings, Adelphi, London, W.C.

Cambridge Summer Course in Physics.

THE summer course in practical physics, arranged by the Association of Assistant-masters for assistant-masters, was again held at the Cavendish Laboratory, Cambridge, during the first three weeks of August last. From the subjoined list of experiments it will be seen that an excellent choice was offered from which to select the twenty experiments that it was possible to get through in the time.

It is proposed next year to make the syllabus slightly more elastic, or possibly even to arrange that—in the special case of a man well qualified—he shall be free to pursue any branch of study, within reason, that he may wish. It is hoped that many assistant-masters will take advantage of the opportunity of familiarising themselves with apparatus which is beyond the means of most secondary schools, and so do something either to qualify themselves as science teachers or to keep themselves conversant with more advanced work.

The course for next summer will be announced in good time in the *A.M.A.* and also in THE SCHOOL WORLD.

Mechanics and Properties of Matter.—(1) Determination of *g* by pendulum; (2) rigid pendulum; (3) ballistic balance; (4) diagram of forces; (5) funicular polygon; (6) harmonic motion of mass hung on helical spring; (7) comparison of moments of inertia; (8) Young's modulus by stretching; (9) rigidity; (10) surface tension by capillary tube; (11) velocity of sound in air; (12) resonance experiments.

Heat.—(13) Air thermometer; (14) water thermometer; (15) coefficient of linear expansion; (16) specific heat of solid; (17) latent heat of steam and of water; (18) melting point of wax by method of cooling; (19) thermal conductivity of indiarubber; (20) mechanical equivalent of heat by frictional experiment.

Light.—(21) Snell's sine law of refraction; (22) refractive index by method of total reflexion; (23) experiments with thin lenses; (24) experiments with mirrors; (25) angle and refractive index of prism by spectrometer; (26) wavelength by diffraction grating; (27) experiments with thick lenses and systems of lenses; (28) focal lines formed by reflexion at concave mirror or by astigmatic lens.

Electricity and Magnetism.—(29) Comparison of magnetic fields by vibration magnetometer; (30) pole strength by Robison magnetometer; (31) determination of the magnetic moment of a magnet and of the horizontal component of earth's field; (32) magnetisation of iron; (33) reduction factor of tangent galvanometer by copper voltameter; measurement of resistance by (34) (i) tangent galvanometer; (35) (ii) wire bridge; (36) (iii) post-office box; (37) (iv) Carey Foster's method; (38) potentiometer; (39) determination of "J" by heat produced in a coil; (40) experiments on induction of currents; (41) comparison of capacities; (42) E.M.F. of thermo-electric couple.

F. M. RANSON.

Royal Naval College, Osborne, I.W.

Solubilities at Ordinary Temperatures.

OF the three data required for finding solubilities at ordinary temperatures, two, viz., the mass of the solid and the temperature of the solvent, are generally obtained directly, the third—*i.e.*, the mass of the water—being found indirectly. The following method, used in the laboratories of this school, gives an accurate result with *one* weighing only.

A certain mass of nitre (say)—not more than 10 grams and finely powdered—is weighed in a small beaker. Water from a burette is run into the beaker until the last particle of solid has been dissolved. At first 5 c.c. at a time are added, then 1 c.c., and towards the end of the experiment, of course, drop by drop. A thermometer is used as a stirring rod, the temperature being read the moment the last particle disappears. The burette reading is taken, and a simple calculation gives the solubility. For example, 10 grams of nitre took 40 grams of water to dissolve it; ∴ the solubility of the solid = 25 per cent. at (say) 15° C.

I may add that excellent results have been obtained by second-year boys who have used this method rather than the tedious process of evaporating a weighed solution to dryness.

J. W. GRIME.

Council Secondary School (Boys), Portsmouth.

Pure Copper Oxide.

I HAVE found very great difficulty in preparing cupric oxide free from copper. The purest I have been able to purchase (Merck's guaranteed reagent) contains a considerable quantity; and repeated moistening with nitric acid, evaporation and ignition, seem to affect it very little. The only method I have found satisfactory is to dissolve completely a small quantity at a time in slightly diluted acid, evaporate, and ignite; but this is a very tedious procedure. The reduction of cupric oxide by hydrogen, and determination of the combining proportions of the metal and oxygen, is a very valuable quantitative experiment for young students; and I shall be much obliged if any science teacher can tell me either where I can procure oxide free from copper or a better way of purifying it.

Gordon's College, Aberdeen. H. G. WILLIAMS.

Esperanto.

IN view of the interest taken by members of the teaching profession in Esperanto, I am prepared to give a lecture (one hour) before any organisation, body, society, or class in which teachers are interested.

I shall be happy to deliver such lecture within a radius of thirty miles from Charing Cross at any hour or on any day except Sunday. Of course, the lecture is free of all charge so far as I am concerned.

J. C. O'CONNOR.

17, St. Stephen's Square, Bayswater, W.

The School World.

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TEACHERS' REGISTRATION COUNCIL.

By the Rev. JAMES GOW, Litt.D.
Headmaster of Westminster.

THE meeting of educational associations, held on November 13th at Clothworkers' Hall, was as complete a success as anybody could have wished. All the resolutions proposed were carried, most of them unanimously. Only two amendments were offered and both were negatived. The speeches were few and brief, and the proceedings came to an end at least an hour earlier than was expected. A representative of the Press remarked that this was "the dullest meeting he had ever attended," and the chairman, the Master of the Rolls, accepted this description as a high compliment. The whole affair reflects the greatest credit on the tact and ability and energy of Mr. Easterbrook, who was mainly responsible for the programme of the meeting.

The resolutions proposed, in so far as they dealt with the composition of the proposed Registration Council, did not differ materially from those which were passed long since by the defunct committee of which I was chairman. They had an obvious reference, however, to a scheme, which was circulated, showing approximately the number of members in the projected Council and their distribution among the several societies of teachers. This scheme, therefore, is really of more importance than the resolutions, for it is safe to say that the remarkable unanimity of the meeting would not have been secured if each of the societies there represented had not been assured, in black and white, that it would somehow be directly represented on the Council. The scheme itself was not put to the meeting, but the voting was clearly on the scheme and not on the resolutions, and the amendments proposed were amendments to the scheme only. By this scheme, "the *first* Council" is to consist of forty or fifty members, of whom nine are allotted to societies of elementary-school teachers, nine to societies of secondary-school teachers, nine to societies of technical teachers, four or five to certain named societies, and the remainder to co-opted members and Crown nominees (number not specified). A little breach in the symmetry of the arrangement will perhaps be caused by the teachers of music, who were not represented at the meeting, and apparently prefer to have a register of their own.

Further resolutions declared that the new Register should be in one column, that the teachers on column B in the old Register should be transferred to the new, and that the fee for new entries should be uniform and not exceed one guinea. Finally, the meeting called upon the Board of Education to hand over to the new Council, not only the balance of money (now about £3,000) which remained in the hands of the old Council, but also the total fees (about £12,000) originally received by the old Council.

It is proper to state, before I make any criticisms on these proposals, that I voted myself for every one of them. It seems to me clear that the Board of Education will not give a hearing to any other project, and not even to this one unless it is supported unanimously. The alternative policy, which I favoured, is to do without the Board altogether; but since the younger members of the profession refuse this plan, it would not be becoming in one who is near the end of his time to put any stumbling-block in the way of peaceful proceedings. Nevertheless, the present project seems to me to have some grave faults in detail, such as might perhaps prevent the creation of a respectable register, and it has one fault in general which, even if a register were started, might prevent it from having any beneficial effect on the teaching profession, *qua* profession, that is, as a self-respecting and self-governing society. For a Teachers' Council must be and ought to be often antagonistic to the Board of Education, which is concerned first with expenditure and politics and with teaching only incidentally. To the Board, teachers are the same sort of nuisance that parents are to the teacher, and a Teachers' Council might prove itself to be the greatest nuisance of all. The Board knows this well enough, and for that reason it abolished the old Registration Council and has been very reluctant to create a new one. When the Board insisted that my committee was not representative and whipped up all the societies of specialist teachers to oppose our demands, that was a clever *ruse*,

intended to make a Council impossible. The Council is now possible, but it may be impotent. The meeting on November 13th, and the scheme which it adopted, are a mere surrender to the Board, leaving to it the definition of "teacher," admitting every society named by the Board, unjustly excluding others which were not named by the Board, and asking the Board to finance the new undertaking. There are here abundant opportunities for the Board to plant a firm contemptuous thumb on the Council, and, so long as that is possible, an independent courageous teaching profession is not to be thought of. The inherent weakness of the proposed Council is in fact its best recommendation to the Board and its best chance of coming into existence.

To turn now to details, the scheme is founded on no principles except that of shutting the mouths of all noisy objectors. Why are university teachers excluded from the Council? Why are no representatives assigned to the Classical Association, the Modern Language Association, the Mathematical Association, the Geographical Association, the Association of Public School Science Masters? These societies consist entirely or mainly of teachers, and have at least as good a right to a place on the Council as a dozen others that are there. Their only defect is that the Board did not invite them to clamour for their rights. What is there *sui generis* in a Welsh teacher or a Catholic teacher that he must be separately represented? What is there in common between a teacher of gymnastics and a "teacher of the deaf on the pure oral system" that each of them must have a voice in determining the proper qualifications of the other? Obviously, at least half the proposed Council will consist of persons who do not understand the business of the other half or of one another. And in that other half there is one society, the National Union of Teachers, which has a large preponderance of representatives well disciplined to work for a single policy and sure to be always present when their interests are affected. It can hardly be doubtful that, in such a Council, the N.U.T. will naturally and legitimately rule the roost.

Again, suppose the Council to be formed and to get to work. It cannot open the Register because, apart from the 11,000 names that will be transferred from column B of the old Register, the terms on which new names can be registered are in no case settled. Imagine the difficulty of settling these terms. There are, for instance, three societies of art masters, who have one representative among them. These societies are perhaps not very friendly with one another, and do not appear to have thought of registration at all until it was suggested to them that their dignity required a place on the Registration Council. Their representative will have nothing to say until his societies have made up their minds as to qualification. If any objection is taken to this, it must be referred to the three societies again. And supposing all the qualifications in each faculty to be tabled together, will there not be a desperate contest to prevent any one faculty from getting on the Register on easier terms than another? Will there not be a steady lowering of all qualifications down to the lowest demanded? I think it is bound to be so. And how long will this adjustment take? Remember that the Council of the scheme is expressly described as only a "*first* Council," and that it is contemplated, after three years, to create a new Council whose "ultimate constitution would depend upon the character which the Register finally assumes." Thus the first Council is not only to adjust all its own difficulties, but to get enough names registered to form a fair criterion of the ultimate contents of the Register and also to propose a new scheme for the final form of the Council. And all this is to be done by a large and unwieldy and heterogeneous assembly of men and women who can only give a few hours a week to the task. The prospect is quite bewildering. The old Council was much smaller and handier, but what success it had was due to the fact that the terms of registration on column B were settled for it beforehand. It sat for six years and worked, I believe, as hard as it could, but it did not in that time succeed in opening any supplemental registers for specialist teachers.

Finally, the meeting of November 13th made some financial proposals which, though I heartily applaud them, are not likely to be well received by the Board. It is possible that, under the Act of 1907, the Board has the power to dispose of the balance paid over to it by the old Registration Council. Of this fund the Board appears to be legally only the trustee for the persons registered on column B, and it will probably be glad to get rid of its responsibility. But the other £12,000 demanded by the meeting must be granted by Parliament. The Board has never promised to pay it as a lump sum and Mr. Runciman has once flatly refused to do so.

These criticisms are not all of my own invention or now made for the first time. Most of them were the commonplaces of the committee of which I was chairman. So long ago as May, 1908, Sir R. Morant suggested that we should call such a meeting as that of November 13th. My committee deliberately rejected the suggestion as involving false principles and repeated its original proposals. Ultimately, in March of this year, a motion for such a meeting was carried, and a scheme, which was closely similar to the scheme above-mentioned, was prepared, but it was repudiated so vigorously that I adjourned the committee *sine die*. Mr. Easterbrook has somehow silenced the opposition, but nothing has occurred to remove the objections. The danger is that a Registration Council may be so constituted as to be, or to make itself, ridiculous. There remains an immense amount of work to be done before a Council, composed of so many and so diverse elements as that proposed on November 13th, will be fit to open a register and take charge of the profession.

AN INTRODUCTION TO LOGARITHMS.

A CHAPTER IN A SCHOOL TEXT-BOOK OF ARITHMETIC OR ALGEBRA.

By DAVID BEVERIDGE MAIR,
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1. IT is 300 years since John Napier, of Merchiston Castle in Midlothian, made his wonderful discovery of a means of simplifying calculations. In the centuries that have elapsed since that time other discoveries have been added, and the whole forms a body of knowledge so well knit together as to obscure the great simplicity of Napier's discovery. For the *index*, with which logarithms are now so closely associated, is an invention of these three centuries; and Napier worked out his system of logarithms without its aid. In the present article I propose to show the essential simplicity of the idea by giving a reasoned introduction after the method of Napier, and consequently without the use of indices.

2. We begin with two numbers, A and ρ. We multiply A by ρ to form another number, which we will call B. We multiply B by ρ and form a new number C. Proceeding in this way, we form a whole series of numbers,

A B C D . . . M . P . . W . . .

each of which is ρ times the preceding one. The number C, which is two steps along the line from A, is equal to A multiplied twice by ρ; the number D, three places from A, is equal to A multiplied three times by ρ; and if the number M is σ places from A, it is equal to A multiplied σ times by ρ. Further, we notice that the number N, which follows M, is formed by multiplying M by ρ, the second number from M is formed by multiplying twice by ρ, and the number standing τ places from M is formed by multiplying M τ times by ρ. Such a series of numbers is known by the somewhat mysterious name of "geometrical series."

3. The object Napier had in view was the shortening of the operations of multiplication and division. Let us suppose that we wish to calculate the quantity $M \times P \div A$ in which the numbers M P A are numbers occurring in our series, and let us suppose that M stands σ places after the first term A in the series. From the series we pick out the number W, which stands the same number σ of places after P. Now because M stands σ places from A, M is equal to A multiplied σ times by ρ, or $M \div A$ is the product of σ ρ's. And because W stands σ places after P, $W \div P$ is the product of σ ρ's. That is, $M \div A$ and $W \div P$ are equal, or W is equal to $M \times P \div A$, and is the quantity which we wished to calculate.

We have, therefore, a series which enables us to avoid certain calculations, and it may be really serviceable if the counting of the number σ of places from A to M, or between any two numbers, is not too laborious. We shall find a simple means of effecting this counting.

4. For the purpose of counting the number of steps between two terms of our geometric series we form a second series—

$$a \quad b \quad c \quad d \quad . \quad . \quad .$$

in which each term (or member of the series) is formed by adding the same number κ to the preceding term. So that b is formed by adding κ to a; c is formed by adding κ to b or by adding κ twice to a; and the number standing σ places from a is formed by adding κ σ times to a. Further, the term standing σ places after a term p is formed by adding κ σ times to p. This series is called an "arithmetical series."

We now place our two series side by side, the two first terms opposite one another, the two second terms in like manner opposite one another, and so on. Thus we have the following table:

A	a
B	b
C	c
.	.
.	.
.	.
M	m
.	.
P	p
.	.
.	.
W	w
.	.
.	.

5. We turn again to the calculation of $M \times P \div A$. From our discussion of the geometric series, we know that the entry M m of our table stands σ steps from the first entry A a, and that the entry W w is σ steps from the entry P p. That is, in the arithmetical series m is σ steps from a, or m exceeds a by σ times κ; and w is σ steps from p, or w exceeds p by σ times κ. Hence $m-a$ is equal to $w-p$, or $w = m+p-a$.

Thus to find w in the arithmetical series we need not count the number of steps from a to m, and then count onwards from p. We simply pick out the term w of the series which has the value $m+p-a$. Then against this term w of the arithmetical series we find in the geometric series the number W, which has the value $M \times P \div A$; which value it was our object to calculate.

This avoidance of multiplication and division, and the substitution for them of addition and subtraction, are the essence of Napier's invention of logarithms; and if successive numbers of our series A B C . . . differ by so little that a number lying between two of them may be reckoned to be equal to one or other of them, our table is already serviceable.

Any number r standing in the arithmetical series against the number R in the geometric series is called the *logarithm* of R; and R is called the *antilogarithm* of r.

6. Certain simplifications have now to be considered. The quantity $M \times P \div A$, which we have discussed, has the first term A of our series as denominator, but we more often wish to calcu-

late a product such as M × P. Let us, then, choose for the first term of the geometric series the number 1. For further simplification, let us choose 0 as the first term a of our arithmetical series. Now to calculate the product M × P, we look out in the table m the number standing against M, that is, the logarithm of M; we look at p the logarithm of P; we take the sum $m+p$; we pick out this number $m+p$ (or w), in the arithmetical series, and standing against it in the geometrical series we find its antilogarithm W, which we know to be equal to the product M × P.

The process of division by means of the table is similar. To find the quotient P ÷ M, we must pick out from the geometric series the number H, which stands as many places from the first term 1 as P stands from M. So that, if h is the logarithm of H (or the number standing against H), h stands, in the arithmetical series, as many places from the first term 0 as p stands from m. Hence $h=p-m$, and we have simply to pick out the term $p-m$ in the arithmetical series, and against it we find the number H, which is the required quotient P ÷ M.

In the form now reached, our table shows all the properties of a table of logarithms of the present day, so far as concerns multiplication, division, and the calculation of powers and roots of numbers.

7. Our table is now serviceable in a sense; but if all numbers, however great, are to be dealt with, it would seem that our geometric series must include them all, and that our table must be indefinitely extended. Fortunately, that is not so, and we shall see how a section of the indefinitely extended table may be made to do duty for the whole.

8. First, we observe that any number, however great or small, may, by the shifting of the decimal point, be made to lie between 1 and 10. If we know the product of these two numbers lying between 1 and 10, we can at once, by again shifting the decimal point, obtain the product of the two original numbers.

9. Let us assume that our geometric series contains the number 10, and write down the section of our table which contains the geometric series from 1 to 10. Denoting by z the term of the arithmetical series corresponding to 10, *i.e.*, the logarithm of 10, and using the special values agreed on for A and a, we have the sectional table:

1	0
B	b
C	c
.	.
.	.
.	.
M	m
.	.
P	p
.	.
.	.
.	.
.	.
10	z

Now let us proceed to calculate M × P. We take the logarithms m and p, and look for their sum w in the right-hand column. If w is less than z, we find w in the sectional table, and opposite to it we find W, the required product. If, however, w is greater than z, the product W must lie beyond the limit of the left-hand column, and the section of the table is not immediately serviceable.

10. W being beyond the limits of our sectional table, let us consider W/10, which we shall denote by S; and let us suppose s to be the logarithm of S. In the geometric series W is as many steps from 10 as S is from 1. Hence, in the arithmetical series, w is as many steps from z as s is from 0; so that $w-z=s$. We are now in a position to use the sectional table to find W. We had found w, the sum of the logarithms of M and P. Instead of dealing with w we deal with $w-z$, that is, with s. In the table we find against s its antilogarithm S, which we know is equal to W/10; so that 10S is the required product W.

11. The calculation of a number W greater than 10 is simplified by choosing a particular value for z, the logarithm of 10, namely the value 1. This improvement in Napier's tables was the invention of Briggs, and logarithms on this system are called Briggian logarithms. With this value for z, every number between 1 and 10 has for logarithm a proper fraction, a number between 0 and 1. For example, the logarithm of 4·431 (written shortly as *log 4·431*) is 0·6465.

In our geometric series, 100 is as many places from 10 as 10 is from 1; 1,000 is the same number of places from 100; 10,000 the same number of places from 1,000, and so on. The corresponding steps in our arithmetical series are from 0 to 1, from 1 to 2, from 2 to 3, and so on. So that—

log 10 = 1
log 100 = 2
log 1000 = 3
&c.

Again, the number of places in the geometric series from 1 to 4·431 is the same as from 10 to 44·31, and from 100 to 443·1, and so on. So that, without continuing our table beyond 10, we see that log 44·31 is 1 + 0·6465, log 443·1 is 2 + 0·6465, &c. Thus the integral part of the logarithm is the number of significant figures which precede the *unit figure*, while the fractional part is the same as for 4·431. We can, therefore, write down the logarithm of any number greater than 10 from our sectional table, and it would be purposeless to extend the table beyond 10.

The integral part of the logarithm bears the name *mantissa*, and the fractional part the name *characteristic*.

12. We can further imagine our sectional table extended backwards, so as to give the logarithms of numbers less than 1. On this extended table the number of places in the geo-

metric series from 1 to 10 is the same as from 0·1 to 1, from 0·01 to 0·1, from 0·001 to 0·01, and so on. The corresponding steps in the arithmetical series are from 0 to 1, from −1 to 0, from −2 to −1, &c. Whence we have

$$\log 0{\cdot}1 = -1$$
$$\log 0{\cdot}01 = -2$$
$$\log 0{\cdot}001 = -3$$
$$\&c.$$

The number of places in the geometric series from 0·1 to 0·4431 is the same as from 1 to 4·431, so that log 0·4431 is formed by adding 0·6465 to −1. This is equal to −0·3535, but it is convenient to leave it in the form $-1+0{\cdot}6465$, in which the fractional part is positive. Similarly

$$\log 0{\cdot}04431 = -2+0{\cdot}6465$$
$$\log 0{\cdot}004431 = -3+0{\cdot}6465$$
$$\&c.$$

Here the integral part of the logarithm of a number, the mantissa, is negative, and is the number of places of the first significant figure from the *unit place*, and the fractional part, the characteristic, is the same as for 4·431. Again, our sectional table gives all we want, and it is as needless to extend it backwards as it is to extend it forwards.

(This method of determining the mantissa for numbers either greater or less than unity by consideration of the number of places of the first significant figure from the *unit place* is simpler than the customary way of considering the number of places from the *decimal point*.)

13. In a table of logarithms for actual use, it is not entirely convenient to have the series of numbers, of which the tables give the logarithms, arranged as a geometric series. For instance, a four-figure table actually shows the logarithms of all numbers

1·000 1·001 1·002 . . . 9·999 10·000,

which lie between 1 and 10, and can be written with four digits. We can arrive at such a table by beginning with a geometric series consisting of many more entries, and picking out the appropriate entries.

In a table of logarithms, the number is given in the margin of the page and the logarithm in the body. For convenience of finding from a given logarithm the number of which it is the logarithm, a second table is often supplied, which gives the logarithm in the margin and the antilogarithm in the body of the page. In such a four-figure table of antilogarithms, the logarithms shown are

0·0000 0·0001 0·0002 . . . 0·9998 0·9999 1·0000,

that is, all the logarithms are shown which lie between 0 and 1, and can be written with four digits after the decimal point. As each of these numbers exceeds the previous one by 0·0001, these logarithms form an arithmetical series. Thus, curiously enough, this last development of tables of logarithms restores to us Napier's original form of an arithmetical series of logarithms placed side by side with a geometric series of antilogarithms or original numbers.

§ 14. Since Napier's day the theory of logarithms has been much developed, and expeditious ways found of calculating the tables. Napier's method of calculating the tables is superseded, but the simplicity of the theory on which it rests renders a short description appropriate.

The problem is to range side by side a geometrical series running from 1 to 10, and an arithmetical series of the same number of terms running from 0 to 1. Now, if α is such a number that ten α's multiplied together make 10, that is, if α is the tenth root of 10, the series of numbers 1 α $\alpha\alpha$ $\alpha\alpha\alpha$ . . . 10 form a geometric series of 11 terms. To find α, we first find 3·162..., the square root of 10, by the ordinary arithmetical process. There is a similar process for the extraction of fifth roots, and we use this process to find 1·258..., the fifth root of 3·162... Since the number 1·258... multiplied five times together makes 3·162..., and the number 3·162... multiplied by itself makes 10, therefore 1·258... multiplied together ten times makes 10; that is, 1·258... is the value of α.

Moreover, the series 0 0·1 0·2 . . . 1 is an arithmetical series of 11 numbers, so that for a first sketch of our table of logarithms we have:

1	0
α	0·1
$\alpha\alpha$	0·2
$\alpha\alpha\alpha$	0·3
. .	. .
. .	. .
10	1

The next step is to calculate β the tenth root of α. This gives nine terms β $\beta\beta$ $\beta\beta\beta$ . . . to insert between 1 and α, and make a geometric series of 11 terms. The corresponding terms to be inserted between 0 and 0·1 in the arithmetical series are 0·01 0·02 0·03 . . . Further, by multiplying α by β once, twice, thrice, . . ., we get nine terms to insert in our geometric series between α and $\alpha\alpha$; the corresponding terms for insertion between 0·1 and 0·2 being 0·11 0·12 . . . In a similar way, we insert terms in the remaining intervals of the table written above.

Then, by calculating γ, the tenth root of β, we can insert nine entries in our table between the entry 1 0 and the entry β 0·01, and so on all the way down the table. And the repetition of this process gives a table in which successive terms of our geometric series (as well as of the arithmetical series) differ by as little as we choose to make them; that is, it gives a serviceable table of logarithms.

In this way, the astronomers of Napier's day calculated in a short time tables of logarithms for use in their work. The fact that the calculation of tables by this tedious process was, on the whole, a saving of labour, enables us to form some idea of the enormous labour which astronomical calculations had involved before Napier's time.

PHYSICAL EDUCATION.

By A. E. Crawley, M.A.

THE Board of Education has evidently taken pains with the revised "Syllabus of Physical Exercises for Elementary Schools."[1] Some experience has been gathered in the five years since its first issue, and the system may now be regarded as practical.

1. Elementary education on the basis of manual instruction, physical training, intellectual and moral training, medical inspection, and provision of meals may now be expected to show results that will justify the enormous expenditure it entails. Hitherto its results have been negligible. This may be a hard saying. One reason is want of experience, or rather the necessity of creating experience. The educator has to wait for the conclusions of the biologist and the psychologist. When at last he is able to apply them, a generation must pass before his own experiment can be tested by results. Two further reasons are beyond his control. One is the quality of the stock, which is admittedly poor, both physically and intellectually. The other is the character of the homes where the stock is raised. Perhaps in a few generations the results of education may influence even these two spheres. The thoughts of the educator must be long, long thoughts.

We are now well in the second generation since the Act of 1870. There is no intellectual or moral progress to show, and, as a culmination (possibly as a result of the whole system instituted in 1870), we have the bogey of national physical deterioration.

1870, it is worth noting, was the year in which Jahn, the inspired physical educator of Germany, was able to chant his *Nunc dimittis*. For the year in which our State educational system was born marked the completion of a generation since Jahn's system reached the acme of its influence, and in that year his admirers claimed "that Germany showed herself the greatest military power since ancient Rome, and took the acknowledged lead of the world both in education and science." All this is as it may be; but the coincidence serves to point the difference between German and English educational epochs and educational points of view.

We must wait our generation; but we shall wait to no purpose unless this system, now fairly launched, is properly steered and is allowed sea-room.

As for the expenditure on elementary education generally, no experience can be too dearly bought, in money, for what is the most serious responsibility of statesmen and citizens. The meaning of citizenship and what it involves is perhaps better understood in the city-state of Geneva today than anywhere in the world; and in the canton of Geneva one-third of the annual Budget is devoted to education.

With free education, free meals, and free medical inspection, we have practically arrived at actual Socialism—for one class. But the spirit of evolution may be felicitated on having introduced it, or its thin end, in the best and most deserving sphere, the education of the children. The State has become the pedagogue, the nurse, of the children of its proletariat. How far this result is fair to the middle class, and how long they will endure the pressure of the upper and the nether millstones in which they are politically and economically placed, are questions which do not concern us here.

2. The Board has recognised and insists on the recognition of the facts that "the physical health of the children lies at the root of education properly conceived"; that "physical education is essential to a sound intellectual training"; and that "physical exercise is necessary to the development not only of the body, but also of the brain and character."

In the commentary to the syllabus no hint is given of the recognition of wider truths, such as that all consciousness is motor; that all sensations and ideas are followed by muscular reactions; that will is entirely a matter of muscular habits; and, finally, that intellectual and moral development, as distinguished from the assimilation and repetition of concepts and conceptual symbols, depends solely on physical activity, exercise, and experience, and cannot be produced (on the contrary, it is rather checked) by literary and scientific culture, the bulk of our curricula, except in so far as this culture participates in action.

The Board urges the desirability of lessons in physical training being given as frequently as the curriculum will allow. Three or four periods a week are suggested as a minimum. It is to be hoped that this minimum will be raised to at least two periods a day, and that the curriculum will be, for this purpose, lightened of a good deal of soul-destroying stuff. The fact, of course, is that the bulk of the curriculum should be physical, including recreative exercises and games. Perhaps this "fact" is theoretical; the practical issue now is that with only four periods a week the experiment embodied in this syllabus has no chance.

Passing to various details, a lengthy caution on the subject of physical fatigue may be noted. This might receive further emphasis for the case of the younger children; the tendency will be to overwork them, especially as they reach the age of eleven to twelve. But from the age of twelve onwards fatigue of the erethistic sort is valuable, and in one form essential to growth. It must be, so to speak, voluntary, willed by the child; accordingly its best sphere is games, but it need not be eliminated from the physical exercises.

In connection with this subject it is to be hoped that the extraordinary amount of neuro-muscular fatigue inflicted on children, especially in secondary schools, by the ordinary mental class-work, should be more generally recognised. It

[1] The Board of Education—"The Syllabus of Physical Exercises for Public Elementary Schools." viii+168 pp. (Eyre and Spottiswoode.) 9d.

seems to be difficult for the average teacher and educator to get away from a false analogy in this matter. The false analogy is this: that, as physical exercise promotes physical development, so intellectual exercise promotes intellectual development. The idea of intellectual development is an abstraction, in so far as the brain is not a muscle. All that intellectual exercise does is, so to say, to deepen the hemispheral paths produced by the perception of visual and audible symbols for abstract facts and their relations. Over-exercise in this direction is deleterious to the memory, to the accuracy of these paths, as if it wore them into ruts, and generally to all mental reaction. In the next place, the greater part of mental training proper (as distinguished from assimilation and repetition of concepts) is connected with the small fine muscles which have been well called organs of thought, such as the muscles of the eye. It is with these that the best and most accurate intellectual work is done, and for practical purposes they are more important than the hemispheral paths which they serve. Their mechanism is very delicate; the end-plates of their nerves are easily fatigued. Here there is an analogy, or rather an identity of physical and psychical; the growth of these delicate systems depends on physical exercise, in the wide sense, but the exercise they need is slight in amount when once they begin to acquire their functional habits. Here is one more reason for a diminution of the intellectual part of the curricula.

"Rightly taught, physical exercises should serve as a healthy outlet for the emotions." In a syllabus based on physiological psychology one does not expect to meet with such a statement. If the teacher knows what emotions are, well and good; but if not, then we are liable to many of the pedagogic errors of the pre-scientific period.

On pp. 48, 49 the directions and illustration for trunk-turning lack precision. Perhaps this is due to the very slight recognition accorded, in the system followed, to rotational movements. Such, of course, are, with the exception of trunk-rotation, chiefly adapted to the last stage, for children aged eleven to fourteen years. Rotational movements of the head, arms and legs, the last including balances, might be included with advantage.

Under the head of "Marching"—why not "Walking"?—it is stated that "the movement of the legs should come from the hips." No mention, however, is made of any method of securing this result. The method of placing each foot on one line, bisecting the body in the direction of movement, may be suggested. In its less extreme form this is the basis of all genuine walking. A useful thing to practise is walking backwards.

Considerable emphasis is laid on breathing. More precise explanation of how to improve the breathing habits, and further exercises, especially such as would promote abdominal breathing, are required. For older children holding the breath is a useful piece of training.

One wonders why "marking time" still retains a place in scientific systems. It has no use; it is a survival from the palmy days of drill, and seems to be connected with the notion that the soldier is an automaton and must be kept on the move.

The "falling" exercises might be improved. For instance, the position of "prone falling" (Fig. 68, p. 150) is that in which one of the most valuable of all physical exercises is performed. But there is no mention of this exercise, familiar to every university and public-school athlete. It should certainly be included in series C. Put shortly, it consists in bending the arms until the chest touches the ground, and then lifting the body by straightening the arms to the original position. This well-known movement exercises nearly the whole body, especially the back, chest and arms.

Again, the "falling" exercises should be so designed as to teach a right method of falling. The Japanese system should be studied in this connection. "How to fall" is a very useful thing to know.

3. The question naturally arises how far this system or an extension of it would be applicable or useful in secondary schools. The system is one of pure gymnastics, but there is no reason why it should not be continuous with applied gymnastics, such as school games and athletics. It is of interest to note that, especially in series C (for children aged eleven to fourteen), the majority of the movements are to be found in various games and sports, in particular, football and swimming, which involve more general exercise of the body than most games.

Several considerations present themselves.

(1) In the ordinary physical curriculum of the great public schools, a good many essential movements are covered by games, in combination with recreative enjoyment and disciplinary training. But a boy must practise boxing, fencing, ju-jitsu, skating, and fives as well as cricket, football, swimming, gymnastics, and athletics (running, jumping, and the like)—an impossibility if they are simultaneous, and practically impossible if in sequence—in order to acquire the whole set of movements which, according to the Swedish system, are necessary for physical training. Yet, as it is, he falls between two stools, and becomes a football, cricket, or rowing specialist.

(2) For children under fourteen the tendency, where games are carefully taught, as in the preparatory schools, is towards early specialisation and excess. The organism, previously to the establishment of puberty, is injured by careful or excessive training in cricket, football, and the like.

(3) Secondary schools which have but small opportunities for the public-school system leave boys of this age at a disadvantage. They have

neither games nor physical exercise worthy of the name.

The conclusion seems to be that an advanced system of physical exercises would be of great value in secondary education. In the public schools it should be used to check too early specialisation and to avoid the consequent excess and strain. It should be continued right through the course, and would thus prevent one-sidedness, produce the potentiality of excellence in any sport whenever taken up, and, by hypothesis, would improve the physical and psychical growth and development by its comprehensiveness and fundamental influence. In other secondary schools it would fill the gap caused by the absence of games and the present lack of a real substitute. Boys from these schools generally leave at sixteen. This is the age at which the organism is just becoming fit for real participation in such games as cricket and football. Such boys would, after having passed through a course of advanced physical exercises, be actually in a better position for attaining excellence in games than is the average public-school product at the same age.

The Swedish system is by no means complete. But there is no reason why a physical system should not approach completeness, and perhaps the most useful form for the suggested secondary-school exercises would be one which comprised most of the movements employed in each branch of athletics, including the various systems of self-defence. The value of such a form would be enormous, both in the general culture of the individual and for the games and athletics thus led up to. An adolescent trained in this way would possess the physical potentialities of an athletic Admirable Crichton, without incurring the disabilities of strain or specialisation. Moreover, the finer movements involved, and the various kinds of effort called out, would have a surprising result on character and intelligence.

The present writer is preparing a system of physical exercises, containing what may be called the essence of all games, sports, and athletics. A few of the movements may here be referred to by way of showing its range and educational bearings. One section includes the various movements of throwing, bowling, jerking, hammer-, weight-, discus-, and javelin-propulsions, and a series of kicking-motions. Another brings out the various ways of hitting with the hand or arm, and with those extensions of the arm-radius produced by the use of bats, clubs, rackets, foils, crosses, sabres, and guns. In another there are the valuable balance-movements and shifted-balancings found in boxing, ju-jitsu, dancing, and figure-skating.

All "pure" systems have the apparent disadvantage of being abstract, possessing no concrete end. This must be ignored, as it is in military training, in athletic preparation, and, of course, in the whole system of education now and always.

A CLASS "RESEARCH" ON COMMON SALT.

By JAMES MASON, M.A., B.Sc.
Sutherland Technical School, Golspie.

A SHORT time ago I carried through with one of my classes a research on salt, adopting, so far as possible, the heuristic method. The class was composed of sixteen boys—average age 14½ years—who had previously had a course in physics; had studied the chemistry of air, water, and chalk; and had found the equivalents of magnesium, zinc, aluminium (by displacement of hydrogen from an acid), silver (by precipitation of silver from a solution of silver nitrate by means of magnesium), and copper (by precipitation of copper from a solution of copper sulphate by means of zinc). The method adopted in the earlier part of the work in chemistry was partly the inductive method, but not wholly so. However, in the present instance, I decided to leave the pupils, so far as possible, to their own resources, so that each boy had to devise and carry out the experiments for himself. Occasionally, I was compelled to make suggestions, but these I have noted in the account which follows. The total time occupied over the "research" was ten periods of one and a half hours each, or fifteen hours in all, inclusive of the time required for writing out the experiment.

The salt used was common salt as obtained from the grocer, and not the chemically pure substance. The pupils were told to find out all they could about it.

The physical properties of the salt were first ascertained. One boy, who had a cut on his hand, found that, when working with the salt, the cut became very sore, and concluded that salt had some action on the human skin. The question of solubility was then discussed, and the neutral action of the solution to litmus noted. Some tried to recrystallise the salt from a hot saturated solution by cooling it under the tap, and one boy mentioned how the exact solubility for a given temperature could be determined.

The action of heat was the next thing taken up. The crackling was noticed by all, but only one boy mentioned that when the salt is brought in contact with the flame a bright yellow colour is imparted to the flame. As a rule the salt was found to become slightly brown when heated, but one or two found the colour to remain unchanged.

The problem of finding what is given off when salt is heated took up some time. Generally speaking, steam was suspected, and this was confirmed by condensing the vapour on a cold flask and testing the liquid formed with litmus and anhydrous copper sulphate. Two boys determined the percentage loss in weight when salt was heated. Afterwards I gave them pure salt and asked them to repeat the experiment. This time they found no diminution in weight, thus showing that the moisture was present as an impurity.

The action of acids on salt was then investigated. Dilute sulphuric and hydrochloric acids were found to have no effect; but in the case of strong hydrochloric acid, a few boys were about to conclude that a gas is given off when a mixture of this acid and salt is heated. I suggested that they should heat strong hydrochloric acid alone and observe what happened. One of them thus describes this experiment:

When we added strong hydrochloric acid to a solution of salt (and heated), a gas, which seemed to come from the solution, extinguished a lighted splinter. But, as little effervescence was observed, we thought it not improbable that the fumes of the acid might constitute the supposed gas. Accordingly, a small quantity of the acid was heated in a test-tube, and the fumes of the acid had the same smell as the gas given off from the solution + acid. By this we see that there is really no gas produced on the addition of strong hydrochloric acid to salt solution.

The action of strong sulphuric acid was noticed by all, and the more apparent properties of the issuing gas were observed. The gas was then prepared on a larger scale by heating a mixture of acid and salt in a flask. Some boys attempted to collect the gas over water, but others foresaw the possibility of the gas being soluble.

If the gas is heavier than air [writes one] we can collect it by downward displacement, and if it be lighter than air we can collect it over water. But here we are met with a difficulty, because, perhaps, the gas is soluble in water. However, we shall try, in the first place, to collect it by downward displacement.

He goes on to add that he was able to do this, and thus concludes that the gas is heavier than air.

Another boy, dealing with the same question, says that he collected the gas over water, but, he adds,

I found that, though the gas was coming off rapidly, the gas jar took a long time to fill, so I thought that some action must be going on which I was unable to notice. While thinking over it, the truth dawned on me that the gas must be dissolving in the water.

Those who attempted this method of collection encountered the same difficulty, and so they soon abandoned it in favour of "downward displacement." The commonly observed properties of the gas were that it was visible (probably due to the fact that it was not quite dry), had an acid taste and smell, was soluble in water, forming an acid, and did not burn or support combustion. One boy found that, when breathed on, the fumes became thicker; another, who poured ammonia solution into a jar of the gas, got dense white fumes formed; and a third found, by practical experience, the scalding effect the gas has on the skin. Many of them tried the effect of passing the gas into lime-water.

The majority now tried to identify the acid formed by dissolving the gas in water, though one or two investigated the residue left in the flask, but could not make much of it. The following extracts will illustrate some of the methods adopted in the identification of the acid:

(i) From these properties I knew that this was an unknown gas to me. I then thought that I might get a clue of what the gas was when it was dissolved in water. I dissolved it in water, and I tested with litmus paper. I found that an acid was formed. I then tried to find any resemblance between this acid and other acids. The only resemblance that I found was that the smell of hydrochloric acid was very like that of the new acid, so I thought that the new acid might be hydrochloric acid. I then made experiments with the two acids. The first experiment I did was to heat both acids. I found that the same kind of gas was given off each. I dissolved both gases in water and got two kinds of acids. I put zinc into both of the new acids and found that hydrogen was given off. I tried the same experiment with a few other acids, but with different results. So, when salt gas is dissolved in water, hydrochloric acid is formed.

(ii) I put some barium chloride solution on sulphuric acid and found that a white precipitate was formed [they had used barium chloride solution for testing the washings in determining the equivalent of copper]. Then I put barium chloride on the acid which was formed by mixing the gas and water, and found that no precipitate was formed, thus showing that the acid was not sulphuric acid. I tried the action of barium chloride on hydrochloric acid and no precipitate was produced. But barium chloride has no effect on nitric acid, so this put me in a fix. However, I took a bottle of ammonium hydrate and put it to the gas of nitric acid, and got no effect. I tried the same with hydrochloric acid and the unknown gas, and found white fumes produced in both cases.

From that he concluded that the acid was hydrochloric acid.

Another boy, after finding that hydrogen was evolved by the action of the acid on zinc and that the gas obtained by the action of sulphuric acid on salt was the same as that obtained by heating hydrochloric acid, proceeded to make a further test:

Knowing that we used hydrochloric acid as a test for silver nitrate when finding the equivalent of silver, I thought that silver nitrate might be a test for hydrochloric acid. So I tried the effect of silver nitrate on this new acid, and I found it turned milky; therefore I was certain that the acid was hydrochloric.

The question of whether the unknown acid was sulphuric or hydrochloric engaged the attention of one, and he compared the action of the three on zinc.

(Hydrochloric acid) + Zinc = (Hydrogen given off) + (clear liquid)
(Sulphuric ") + " = " " + (milky ")
(x ") + " = " " + (clear ")

Now it leads me to think that this acid I have made is hydrochloric acid, because it behaves in like manner, and hence the gas would be hydrochloric acid gas. This experiment, I know, is not a very satisfactory proof, so I shall endeavour to find out if I cannot get something that will prove this more definitely. I know that if chalk is treated with hydrochloric acid it is decomposed and a clear liquid is left, while with sulphuric acid the substance left is white. I tried the chalk with my own acid, and found that it left a clear liquid. I think this has proved to me that the acid is hydrochloric acid and the gas hydrochloric acid gas.

By methods somewhat similar to the above all the class, with the exception of one boy, satisfied themselves that the acid was hydrochloric. In his case, as he was unable to devise any experiment that might lead him to identify the acid, I had to lend assistance.

Up to this stage, with the bulk of the class there had been no difficulty, but the next step presented some trouble. Now that they had convinced themselves that the gas was hydrochloric acid gas they were at a loss as to what they should do next. But by questioning them, and by referring them to the case of carbon dioxide, I was able to elicit the information that they should try to find what hydrochloric acid gas was composed of. I then asked if they suspected the presence of any element in the gas, and, in reply, was generally told "hydrogen." Of course, there was the difficulty that the hydrogen which is evolved by the action of hydrochloric acid on zinc might come from the water in which the gas was dissolved. (This questioning was done individually, as the pupils did not all work at the same rate.)

One boy jumped to a conclusion rather hurriedly on the question of whether hydrogen is present in the gas.

Does the hydrogen obtained from the action of hydrochloric acid on metals come from the water or from this gas? The acid, we found, is composed of hydrochloric acid and water. Water does not act on zinc alone, and therefore the hydrogen does not come off the water. The metal is an element, and hydrogen is not one of its parts. This shows me that hydrogen must be present in the gas.

However, most of the class proceeded on the following lines.

From experiments previously performed I was led to ask myself whether salt gas contained hydrogen or not. I knew that salt-gas acid acted on zinc, giving off hydrogen, and I knew that salt-gas acid contained salt gas and water. Now the question was, where did the hydrogen come from, from the water or from the gas? Obviously not from the zinc. I passed the gas over some zinc in a test-tube, and on the application of a lighted splinter hydrogen was found to be given off.

In carrying out this experiment the gas was generated in the usual way, and, at my suggestion, deprived of its moisture by passing it through a U-tube containing either calcium chloride or pumice stone soaked in sulphuric acid. The dry gas was then passed over zinc or magnesium (some boys used one and some the other) in a test-tube or bulb-tube and the gas collected over water. A few heated the metal, but many found that application of heat was not necessary.

The next problem was to find the other element or elements in hydrochloric acid gas. Some turned their attention to the magnesium and noticed that it had changed. One boy, thinking that nitrogen might be the other constituent of hydrochloric acid gas, added a little water to the changed magnesium, heated, and noted if the smell of ammonia was obtained. (In finding the equivalent of magnesium by heating it in a crucible they had tested the magnesium oxide for magnesium nitride by this method.)

The usual method, however, was to get rid of the hydrogen.

Seeing that I got hydrogen out of hydrochloric acid gas, I saw that if I could get the hydrogen taken away the rest of the gas would be left. So I now hunted about for something to take away the hydrogen, and I thought of oxygen, and oxygen could be got by heating potassium chlorate. As I passed the hydrochloric acid gas over potassium chlorate, the hydrogen united with the oxygen and formed water, while the other gas passed on and was collected.

Later he adds:

I then thought of trying the effect of hydrochloric acid on potassium chlorate and found I got the same green gas off, and so I now simplified the apparatus by putting potassium chlorate and hydrochloric acid into the flask and doing away with the test-tube.

One boy tried to oxidise the hydrogen by mixing hydrochloric acid gas and oxygen; another passed oxygen into heated hydrochloric acid in the hope that the hydrogen might be oxidised; but both attempts were unsuccessful. The successful methods included passing hydrochloric acid gas over potassium chlorate (heated, if necessary), heating a mixture of potassium chlorate and hydrochloric acid, and heating a mixture of salt, sulphuric acid, and manganese dioxide.

Another boy writes:

I wanted to find out what remained in the gas when the hydrogen was separated from it. So I heated a mixture of manganese dioxide, salt, and sulphuric acid. The reason why I had manganese dioxide in the flask was that the oxygen of the manganese dioxide would unite with the hydrogen from the hydrochloric acid gas, and in this way I managed to collect the remnant of the hydrochloric acid gas.

The properties of the "green gas" usually noted were: that it had a colour, taste, and smell, was heavier than air, was soluble in water—the solution turning red or blue litmus-paper white—and did not burn or support combustion. Many of them did not seem to realise that the gas bleached until I told them to try the effect of the gas on red blotting-paper, paper with writing on it, &c.

At this stage I thought it advisable to mention that the gas obtained by using potassium chlorate and that obtained by using manganese dioxide were not really the same, although they appeared to be so. The latter, I told them, was called chlorine, and the former was a mixture of chlorine and another gas, so that they had better use the manganese dioxide method of making chlorine, partly because it gave a purer gas and partly because it was safer. I then suggested that they should burn sodium in a jar of chlorine and taste the substance formed. The experiment is thus described in one paper:

I collected a jar of the gas and put into it a deflagrating spoon containing burning sodium. When the sodium had quite burned out I tasted the solid left in the spoon, and

to the taste it was somewhat like salt, so I thought it not improbable that the experiment I had done was a possible method of salt synthesis.

The last stage in the research was comparatively easy.

Perhaps hydrochloric acid gas contains something else besides these two gases, but, if we can make hydrochloric acid gas by uniting these two, then the aforesaid gas contains hydrogen and the green gas, and nothing else.

I did not suggest the experiment, but indicated how it could be carried out, namely, by mixing together a jar of hydrogen and a jar of chlorine, applying a light, and testing the resulting product for hydrochloric acid. From this they were able to conclude that hydrochloric acid gas = hydrogen + chlorine.

In making a few comments on the above I am, of course, aware that some of the "proofs" advanced are not quite rigorous. On the other hand, they are the pupils' own, and the faults can easily be pointed out when I hand them back the accounts of the research.

The interest shown by each boy in the work was, generally speaking, much more than that usually evinced in following out experiments from a book, the blackboard, or from instructions.

The small area covered in the large amount of time is a factor which has to be reckoned with. Last year, with another class, I traversed the same ground in about half the time—by suggesting every experiment and giving instructions as to the method of carrying it out. But, after all, knowledge which a boy has found out for himself is of far greater value to him than that which he has acquired by the help of a teacher.

GEOGRAPHICAL BOOKS FOR THE SCHOOL LIBRARY.

By B. C. WALLIS, B.Sc., F.C.P.

IT is of the essence of good teaching that the pupil should be trained to investigation on his own account and that he should feel a stimulus towards finding out things for himself; and it is one of the chief objects of geography teaching that the pupil should feel this stimulus especially towards first-hand information as to the peoples and characteristics of countries other than his own. To this end one of the most important factors lies in the provision, in the school library, of descriptive works pertaining to other lands which provide in their subject-matter, or in their treatment, those elements of interest which stimulate the pupil to read thoroughly and to desire further information about the same region of the globe.

It will be obvious that the mere provision of these books is in itself insufficient, that the teacher of geography has much to do in providing the first stimulus, and in directing the energies of the pupil who may, particularly in the early stages of his reading, require guidance and help; but this part of the work can safely be left to the teacher, and here there is no need to do more than provide a few notes on some works which might fittingly find a place in the geographical library. It is not intended to discuss works which are useful for reference, or works with a definitely technical bias, as, for example, Partsch's "Central Europe"; but to treat briefly of books in which there occurs an essentially human interest, either due to the traveller who writes or the people who are described. The books suggested are numbered in the appended list, and are of fairly recent production. Work of this kind in training the pupil to read and to investigate becomes of predominant importance the nearer the pupil approaches the age at which he leaves school, to find himself surrounded by a sea of books across which he will drift helplessly without some guiding principles gained at school.

The British boy accustomed to small rivers will appreciate the difference between the rivers of his own land and the mightier rivers of Europe after reading the first book,[1] which contains a description of a voyage from the mouth of the Rhine to the mouth of the Danube. Two Britons sail a small boat up the Rhine and Main, along the Ludwig Canal, and down the Danube; and their troubles with the customs officials, their toils, now sailing, now in tow behind a barge on the Rhine, their stupendous exertions in their attempts to pass upstream against the current on the Main, their passage of the canal—the first boat through after the freeing of the canal from the winter's ice—their adventures in the towns and villages and among strange people, provide a picture of Central Europe which the balder narrative of the class-room cannot hope to present. Waterways are always important geographically, and the untravelled child does not inevitably appreciate the differences between the smooth waters of the lower course of a river and the tumultuous rush of upper waters; but in this case no reader will fail to grasp the difference when he reaches the description of the way in which these travellers pulling at the tow rope lay almost horizontally in their efforts to pull upstream, and at last had to avail themselves of the help of the steamer, which picked up a chain from the bed of the Main and slowly by its aid passed up against the current. The contrast between the Ludwig Canal cut on the side of the hill, with the villages below it and the peasants running uphill to view the passage of their novel craft, and the waters of either the Rhine or the Danube in their lower courses, emphasises the difference be-

[1] (1) "A Cruise across Europe." By Donald Maxwell. (Lane.) 10s. 6d. net.
(2) "A Canyon Voyage." By F. S. Dellenbaugh. (Putnam.) 15s. net.
(3) "The Silken East." By V. C. Scott O'Connor. (Hutchinson.) 42s. net.
(4) "We Two in West Africa." By Decima Moore and Major F. G. Guggisberg. (Heinemann.) 12s. 6d. net.
(5) "Two Dianas in Alaska." (6) "Two Dianas in Somaliland." By Agnes Herbert and A. Shikari. (Lane.) 12s. 6d. net each.
(7) "The Cradle of the Deep." By Sir F. Treves. (Smith, Elder.) 12s. net.
(8) "The Web of Empire." By Sir D. M. Wallace. (Macmillan.) (Out of print; can be obtained secondhand.)
(9) "The Long Labrador Trail." By Dillon Wallace. (Hodder and Stoughton.) 7s. 6d.
(10) "Washed by Four Seas." By H. C. Woods. (Fisher Unwin.) 7s. 6d.

tween the mountains of the interior of Europe and the plains bordering the Lower Rhine and the Lower Danube.

In decided contrast to the cruise across a civilised and populous continent is the journey made nearly forty years ago down the Green-Colorado river from Wyoming and described in the second volume. Here the traveller was dependent upon his own resources, and was passing downstream along a river which presented danger and possibly death with almost every mile of the trip. The descriptions of the shooting of the rapids, of the portages where the rapids were too dangerous, of the difficulties attendant upon photography in those early days of its development, of the climbs from the level of the river up the slopes to the top of the encompassing cliffs, of the exploration of the tributaries, and of the scientific work consequent upon life in an unknown country, of the few people in the neighbourhood and the difficulties attendant upon communications with, and the obtaining of supplies from, the outside world, added to the continuous thread provided to the narrative by the personalities of the explorers and the individuality of the river, yield a picture of high geographical value. No pupil who reads this book can fail to have a richer idea of the meaning of river erosion and of the canyon-formation of certain rivers.

From the rivers of colder regions peopled by races like our own this book, the third on the list, turns to the tropical land of Burma and to tropical rivers. The author describes the lands bordering the stream, and the people and their occupations. While reading the description of a journey through tropical jungle and forest, with the attendant difficulties of transport, one feels the atmosphere of the tropics. The work of the outposts of Empire is evidenced by the difference between the habitats of the natives upstream and on the flats at the mouth; and also by the story of the conservator of the forests, living in a house built on a raft moored to the bank away from intercourse with other Europeans. The enterprise of the steamship company shows how important a waterway becomes in the absence of other means of transport, and in this connection the contrast provided by the account of the journey overland is important. The defiles of the river formed by the approach of the hills to the water's edge, and the picture of the steamers coming downstream tail first ready to steam away from dangerous rocks, serve to accentuate the difficulties attendant upon river navigation. The author describes a voyage through the delta, and depicts the level monotony of the land and the narrowness of the channels where the steamers wait in open spaces to pass each other, and where the steamers towing flats pass along with the tarred sides of the flats hustling and rasping against the drooping branches of the trees. The pearl industry in the neighbouring islands provides another picture of tropical life, which is contrasted with the picture of the ruby mines earlier in the book.

From one tropical land to another. The fourth volume contains an account of surveying work in West Africa which fills out the picture of tropical life and its difficulties for Europeans. In this land there is no river to relieve the traveller's anxieties as to transport; and the trials of a journey, especially for a lady, the troubles of moving heavy loads, sometimes large pieces of mining machinery, make the reader realise what some forms of Empire-building mean. The call of West Africa to those who have lived there, the landings through the surf, the daily life of the European colony form one side of the picture, and on the other are the dense jungle, the natives and their ways, the derelict dredger on an up-country stream, reminiscent of the mining difficulties away from civilisation, and running through the whole the thread of the survey work accomplished.

From the picture of a lady travelling amid the performance of the Empire's work in a tropical land the reader turns, in the fifth volume, to the story of two ladies who are in or near the regions of the cold deserts for amusement, to hunt caribou and mountain sheep in the wilds of Alaska. The voyage along the Pacific coast, the life of the coast towns and the coasting steamer, camp life on the hunting journey inland, are all in striking contrast to the episodes of the other story. The treatment of their captures of salmon by the natives, the boiling of blubber in native villages, the shooting of walruses, the finding of wild strawberries on the flat lands near the coast, the navigation of the ship, and the adventures with mosquitoes all provide interest to the main story; while from the latter, with its description of climbs over the hills and mountains, its adventures in pursuit of caribou and mountain sheep, provides a geographical picture of this remote region which makes the class-room story of life in the cold deserts vivid and natural. After reading this tale, many of the boys and probably not a few of the girls will wish for the time when they may traverse the little-frequented regions of the world in pursuit of game and adventure.

The sixth volume, by the same authors, provides contrast to the story of hunting in Alaska and to the account of life in West Africa in volume four. Here again is a vivid narrative of life in a tropical land.

The seventh volume is an account of a voyage by ordinary mail steamer from England to the West Indian islands and home again. Throughout the story runs the geographical thread due to the lands, their vegetation and scenery, their peoples and the work they do. The author visited Panama, and has something to say on the geographical importance of the isthmus and its transit both now and in days of old, and he never forgets that the lands he sees have a history which is interwoven with the story of exploration and settlement. The stories of the eruption of Mont Pelée and of the earthquake at Jamaica are told graphically and their results enumerated. One would have long to search to find a more in-

teresting account of the West Indies and the Spanish Main. The picture, perhaps, from the geographical point of view, errs by allowing too much history to be woven into the narrative, but the book provides an interesting example of the way in which the geographical story of the present epitomises the historical story of the past.

The story of a voyage round the Empire fills the eighth volume. In this book arises the personal element due to the traveller, for it is an account of the voyage of the *Ophir*, in which the present Prince and Princess of Wales, then Duke and Duchess of York, visited the Empire. From the geographical point of view there is the constant contrast provided by the topography and the natives of the lands visited. To enumerate but a few of the points of geographical interest, there was the visit to the tanks at Aden, the railway ride into the interior of Ceylon, the visit to Singapore with its cosmopolitan population, the railway ride across Eastern Australia, and the visits to the natural beauties of New Zealand. These are a few of the important features of a work which is replete with interest as an account of the Empire to which we are proud to belong, and the spirit which builds that Empire is admirably shown by the recorded conversations between the writer and Empire-builders in various parts of the world. From the tropical jungle of Ceylon to the frozen peaks of the Canadian Rockies the reader follows the journey with interest and sympathy.

The Barrens of Labrador, the American type of the cold deserts, are somewhat difficult to imagine; but the pupil who reads in the ninth book the account of a journey by canoe and sledge along an old Indian trail will certainly feel something of the atmosphere of such a region, with its rains in the warm season, its ice and snow in the winter, and its wind-storms at all seasons. The mosquitoes and the wild berries remind the reader of Alaska, and the life of the Eskimos tends to complete the resemblance; but here arises the difference due to the great trading companies, whose business of collecting furs demands that white men should live for years apart from civilisation and act as agents in trading with the natives. The traveller accepts hospitality and help from the factors of both the Hudson's Bay Co. and Revellion Bros. The journey homeward across the snow and ice, the difficulties of the traveller in finding shelter, wood for fuel, and in managing his dog teams and sledge are vividly depicted, and the whole story, with its appendices of scientific results, is bound to add materially to the geographical store of facts and ideas possessed by the reader. Boys especially will be interested in the accounts of the Indian method of hunting caribou, while the sympathy of girls will be aroused by the story of the white women who live in these wild regions at the more civilised fur-trading stations.

The last volume on the list deals with travels in the Near East, one of the little known regions of Europe. It is especially suitable to the boy who has some interest in matters strategical by reason of his place in the school cadet corps. The author describes the physical features of the country he traversed, both in the Balkan Peninsula and in Asia Minor, and the reader realises the geographical control due to mountains, as shown in the roads and the railways. The habits of the official class, the customs of the people, the descriptions of the country, the photographs of typical features of the land and of the inhabitants, make the book one of real geographical importance, as well as give it a place in this list of works to which the pupil may be directed so that he may begin, under due guidance, to delve amongst the mass of first-hand information which publishers have formed the habit of supplying. The seriousness which characterises this work fits it for use in the higher forms.

The books treated in this article form a random selection from current literature which, in the opinion of the writer, will serve to supplement the necessarily specialised geographical studies of the class-room and the geographical laboratory.

THE PENARTH HOME-MAKING CENTRE.

By CONSTANCE C. RADCLIFFE COOKE.

IN the Report of the Poor Law Commission (section 10, "unemployment") there is a striking paragraph the truth of which will come home to most persons who have had anything to do with elementary education in our primary schools. The paragraph is as follows: "Our expensive elementary education is having no effect on poverty; it is not developing self-reliance or forethought in the characters of the children; it is not giving them any technical training, and is, in fact, persuading them to become clerks rather than artisans. In other words, we give the children some book-learning, and then turn them out into the world with little or no practical knowledge of, or acquaintance with, the kind of work they would have to do in the various callings which many of them must follow, and it is desirable more should follow, when they grow up and think of settling in life."

This defect in our system of elementary education might be removed or remedied if the State, which now virtually takes charge of our children, were to adopt and extend a scheme in successful operation at a primary school in Penarth under the Education Committee of the Glamorgan County Council, the main object of which is to fit the children (in this case girls, though it is equally adaptable to boys) for their future work in life. The author of the scheme, Miss E. P. Hughes, to whose initiative and energy the experiment and its success are largely due, was for many years principal of the training college for secondary-school teachers at Cambridge; she is a member of the Education Committee of the Glamorgan County Council and a manager of twelve primary schools. In these capacities she has had opportunities of noticing how difficult it is to

get the children, especially the girls, to attend school regularly between the ages of twelve and fourteen years. On inquiry she found the chief causes of non-attendance to be that the mothers wanted the help of the children at home, and that the children were willing to stay because, in the words of one of them, they "liked doing useful things." Now it occurred to Miss Hughes that if the children could be taught "useful things" in their school time, the instruction thus given would not only make school attractive to them, but would render them more helpful at home, and so afford a remedy for non-attendance, whilst at the same time conferring lasting benefit on the children themselves.

The curriculum of the elementary education course for children between the ages of twelve and fourteen years was a stumbling-block, since it does not provide the system best adapted for their development in the last two years of their school life. Men of science tell us that children, in growing up, pass through various stages, akin to those through which the human race has passed from primitive to civilised times, and reach the stage of civilisation when about twelve years old. At that age their minds become more receptive; they begin to think more of the opinions of grown-up people, so that from twelve to seventeen or thereabouts is, so to speak, the teacher's best chance. Just, too, as the end of a lesson, where the knowledge the children have gathered is focussed and made available for future use, is the most important part of it, so is the end of a course. Consequently, the two last years which comprise the end of the elementary course are the most important part of a child's school life; and it depends very much on the way the children are educated in these years whether what they have learned during the whole course will be retained, and whether they will continue to study after they have left school. Children, therefore, between the ages in question should receive a secondary education, because they have reached the secondary-school stage.

In order to carry out her scheme, therefore, Miss Hughes obtained the permission of the Education Committee to alter the curriculum of the Albert Road School in Penarth in such a way that the girls who reached the age of twelve years might be enabled to spend half of their school time in what she has designated "home-making." Ninety per cent. of the girls in our elementary schools are destined to be "home-makers"; that is to say, they will either have homes of their own to manage or they will assist in the homes of others, and the happiness and welfare of the inmates of those homes will largely depend on the home-makers. In order that the experiment might be started on practical lines, Miss Hughes visited several working-class homes, to see how they were managed. She found, as might be expected, many defects. The houses were dirty, and the rooms and their occupants untidy. The housewives, or home-makers, had little idea of comfort, were content to make shift with out-of-date appliances, and to go on in their accustomed way, not knowing or not caring about new inventions or modern improvements. They were uneconomical, not to say extravagant, in the food they provided, yet it often lacked variety, and was ill-cooked and ill-served. She found that things were worse in these respects than they had been because it was so easy to get tinned foods, and because the children, being away longer in school, found more interest and excitement outside, and gave less help at home.

Armed with the information thus obtained, Miss Hughes set to work to make the children useful by placing instruction in home-making at school on a definite scientific basis. The system has now been on trial for some time, and, as I have had the advantage of becoming personally acquainted with the author and her scheme, I will shortly describe the latter. The Board of Education require that 200 hours in the school course should be spent on technical subjects, namely, eighty on cooking, forty on laundry, and eighty on housewifery. These are now more than doubled in the Albert Road School, 500 hours being allotted to technical work, some of which is done *every day*, as it is found that in this way the children forget little, and do the work much faster than if their instruction were intermittent. On the ground that general education and technical education should, so far as possible, be combined, the children are given two and a half hours a day of each kind. The shortening of the time expended in general education renders it essential that this should be exceedingly *educative*, that is to say, that it should be of a character to make the children think and find out things for themselves. In order, too, to give them a sense of responsibility, and teach them to be self-reliant, they are allowed to govern themselves. In the Penarth School the girls have elected a mayor, deputy-mayor, and council from among themselves; and they govern their small community in a manner that might serve as an example to many municipalities.

The Technical Education Course embraces a wider range of subjects than is required by the Board of Education; for instance, it includes carpentering, cardboard work, and the care of children; nor are the subjects taught in the order prescribed by the Code, where cookery comes first, then laundry, then housewifery. In Miss Hughes's scheme the children are taught the easier subjects before the more difficult. Thus laundry, which is easy, comes before cookery, which is difficult. But before these and any kindred subjects are taught, it is thought desirable to give the children some preparatory physical training; some instruction in simple scientific principles; and, in order that their general education should bear on their technical work, a course in sociology. On the technical side, therefore, there is a preliminary course in handicrafts (carpentering and cardboard work), whereby the children learn to be quick and clever

with their fingers, and neat and accurate in their work; and a course in science to ground them in the principles underlying practice, as, for example, in cookery, the difference between roasting and boiling, and why some meats are best roasted and others boiled. The course in sociology consists, in the case of girls, in a review of woman's work in the world, through the various stages of man's progression, from the hunter stage, the shepherd stage, the agricultural stage, and so on to the industrial stage. From this the children discover that in all these stages woman's work, though it has altered in kind and character in the lapse of centuries, has always been essential to the welfare of mankind, and has always been difficult, and that, consequently, to do it well home-makers need to be carefully trained.

The method of teaching is exceedingly practical. Thus, furniture and fittings being required for two rooms—a model sitting-room and bedroom—Miss Hughes took the children with her to secondhand shops, and, in consultation with them as to suitability and price, chose the articles wanted. Some were dirty and out of repair; these were cleaned and mended by the children themselves, who thus took a personal interest in the rooms, which it was part of their home-making work to keep clean and tidy. As an example of the constructive ingenuity of the children, and of the economical spirit with which they are imbued, I may here mention that, instead of buying a cradle ready-made, they contrived to fashion a very serviceable one out of a banana crate at a cost of sevenpence halfpenny. With a view to get on the right side of the parents, some of whom were at first disposed to look askance at the new departure, Miss Hughes took them into her confidence, sought their advice, and, as a fact, received from many of them useful suggestions with regard to the practical details of her scheme. For instance, she found that the mending of old garments was more important in a working-man's family than the making of new ones, so by degrees the parents were encouraged to send articles of clothing, hats, the father's coat, &c., to be mended under instruction by the children, baby's bottles to be properly washed, and so on. The mention of washing reminds me of a feature which added greatly to the success of the scheme. Tuesday, it seems, being by common consent in Penarth washing day in working-class households, the families on that day must put up with cold victuals, there being no time or convenience for cooking. After a while, the parents were induced to send their provisions on these days to be cooked by the children at the school, whence they were taken back in the shape of hot and savoury dishes, a change which, greatly welcomed by the men on their return from work, contributed as much as anything to the popularity of the new *régime*. The instruction in housework which the children receive at the school also results in increased comfort in their homes, because every Saturday they busy themselves in cleaning the house and tidying up after the systematic and thorough fashion learned at school.

Besides classes in hygiene, sick nursing, first aid, and the like, the children are taught in a practical manner perhaps as important a citizen work as any that home-makers have to do, namely, the care of infants. For some weeks in the summer the schoolroom is turned into a nursery. Each of the infants, whose ages vary from two to four years, is placed in charge of a girl who is taught how to manage it properly from the first day she has care of it. The girl nurse decides what sort of toys the infant should have and makes them herself. She consults with the teacher as to what should be done with it if it is naughty, for she is never allowed to scold or smack it, and every week each little home-maker writes an account of the child under her charge. In this way, the girls gradually find out that there is no more interesting work than the care of children.

Apart from the technical work, the method of teaching generally is on modern lines, and highly educative. The teachers follow the plan of the old German master who said that the aim of the teacher should be to teach the children to do without him. They have rearranged the subjects of study and reduced their number, and they have adopted a system of eliciting the views of the children on such subjects as nature, art, the Empire, by suggesting questions and problems which the children endeavour to solve and answer, so acquiring at once a readiness of speech and a firm grasp of the main points of the matters discussed. The children are also encouraged to ask questions of persons who come to the school on duty, as the school inspectors and the lady doctor; also of strangers of different nationalities who from time to time visit the school for the purpose of observing the working of Miss Hughes's system of instruction.

The practical results of this system in the Penarth Home-making Centre, to give the Albert Road School its commonest appellation, may be summed up as follows. The children attend much more regularly than formerly, and their intelligence has been greatly developed. They quite realise that the course of instruction they are undergoing at the school is but the beginning of a longer period of training, and, conscious when they leave that they have not been made into perfect little home-makers, they are keen to learn more. The parents also take a deep interest in the system pursued at the school, seeing what "useful things" their children do there, and how much more helpful they are at home in consequence.

From the foregoing account, it will be seen that the system demands from both teachers and pupils initiative and energy in the highest degree. Teachers and pupils are co-operating in a pioneer work of no ordinary kind, for they are prepar-

ing the citizens of the Empire for their work in life, and are preparing them to do it well. Home-making is, as I have said, a difficult business, yet women have to transact it without any previous scientific training, because home-making has not been thought of as an art that, like all arts, requires to be learned if proficiency is to be attained in it. A system of instruction in the art, such as I have described, erected on a sound scientific basis, should attract the college woman, since it demands qualities that an academic training is calculated to bring out and strengthen; broadens the outlook on life; and opens out innumerable possibilities of helpfulness in many directions.

The Penarth Home-making Centre is an experiment, but an experiment that has proved successful. In a report on the scheme to the Education Committee of the Glamorgan County Council, "high appreciation" is expressed "of the work that has been done at the Penarth Combined Domestic Subjects Centre"; the system is considered to have been "very successful," and it is hoped that the Council "will be able to see its way to continue this very interesting experiment."

PERSONAL PARAGRAPHS.

THE REV. DR. HORNBY, the Provost of Eton, died towards the end of his eighty-third year. He was educated at Eton and Balliol, and was an all-round scholar and athlete, playing in the Eton eleven, rowing twice in the Oxford eight, and being an ardent Alpine climber. He held a fellowship and lecturership of Brasenose, the principalship of Bishop Cosin's Hall at Durham, the second mastership of Winchester (from 1867), and was elected to the headmastership of Eton in 1868. He was headmaster for sixteen years, and was chosen in 1884 to succeed Dr. Goodford in the provostship. At the funeral service in Eton College chapel, Mr. Lyttelton paid an eloquent and discriminating tribute to the memory of the late Provost, who, he said, united strength and beauty of person with an extraordinary dignity and charm of manner. He was marked by an instinctive consideration for the feelings of others, and "he was not only now and then, but at all times and in all surroundings, the very type essence of all that is implied by the grand English word 'gentleman' when used in its richest and most satisfying sense." The headmaster also singled out for mention the late Provost's unvarying courtesy and his shrinking from anything in the least resembling display. His courtesy was built up on the Christlike temper towards other men. He was by nature the guardian of Etonian traditions, and a lover of Etonian antiquities.

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THE new headmaster of Rugby, in place of Dr. James, resigned, is the Rev. A. A. David, who will leave Clifton College to fill his new post. He is now in his forty-third year, and was educated at Exeter School, and at Queen's College, Oxford. He took first classes in classical moderations and Lit. Hum., and after graduating in 1889 spent a year as lecturer at Queen's. He next gained experience as an assistant-master at Bradfield College for two years, when he was appointed on the Rugby staff, and worked there for seven years, 1892–9. He now returned to Oxford as a fellow of Queen's, and filled successively the offices of assistant-tutor, precentor, junior bursar, and Dean. His energetic temperament gave him a full experience of the life of the University, and he was especially a keen member of the University Volunteer Corps. He was appointed to Clifton in 1905, and has had there four years of very successful rule. Like many another prominent headmaster, Mr. David has taken an active interest in civic affairs, and it is said that Bristol will miss him in this respect. Among other candidates for the Rugby headmastership were the Rev. Bertram Pollock (Wellington), the Rev. R. Waterfield (Cheltenham), and the Rev. St. J. B. Wynne Wilson (Haileybury).

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THE REV. T. F. HOBSON, headmaster of King's School, Rochester, since 1901, has been appointed to the vicarage of Leatherhead. He was educated at Radley and Christ Church, and had his first teaching experience at Radley from 1883 to 1889. Thence he went to Wellington for four years, and became warden of St. Edward's School, Oxford, in 1893, where I made his acquaintance, when the present warden was an assistant-master. After three years of St. Edward's he returned to Radley for four years, until he was elected to Rochester.

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MR. J. F. ARNOLD, the headmaster of Archbishop Tenison's, died recently, in his seventy-second year. He had held his office for thirty-seven years, and in his time had done much to raise the status of the school. He was known as a strict disciplinarian, but this characteristic was not inconsistent with geniality and tact, and his interest in his pupils made itself felt when they had passed out of his hands. He was an enthusiastic member of the Association of Headmasters, being chairman of the London division of that body.

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LADY CROGAN has written a memoir of Reginald Bosworth Smith, who was for thirty-seven years an assistant-master at Harrow. He was one of a comparatively select few schoolmasters who have managed to leave their impress on the world of affairs and letters. He made his mark as a historian, a biographer, and a mover of men, and to some extent reminds one of the career of Mr. A. H. Beesly, of Marlborough, whose death I referred to in a recent note. Both wrote famous epoch books of Roman history, both did good work in biography, and both seemed fitted to influence men in a somewhat wider sphere than that of school. Both influenced the lives of their pupils profoundly. Bosworth Smith, however,

was destined to play a more prominent part in the history of his country than the other. He threw himself like a hero into the struggle on behalf of the National Church, which he regarded as the most powerful agency for good in England. His letters to the *Times* "advocated the historic claim, the present usefulness, and the future capability of the Church," and as the result of his efforts the Liberal measure for Disestablishment ceased to figure in the Liberal programme. "The assistant-master at Harrow School," says the *Times*, "had gone very far towards being the saviour of the National Church." Two odd facts may be recorded of him. He could do everything well except write legibly, and he would not learn a modern European language.

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ONE of the most valuable criticisms of the present public-school system I have read lately is that made by Mr. H. B. Mayor, of Clifton College, in an article contributed to the November number of the *Nineteenth Century*. The writer sets out to prove the fallacy of the "Elder Brother" theory of schoolmastering. For my part I have no doubt that Mr. Mayor's contention is wholly right, and I mention the article here so as to direct the attention of those who have not yet read it to a little sermon which will not be wasted in a good many common-rooms.

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PROFESSOR WILLIAM R. MORFILL has recently died at Oxford at the age of seventy-five. Appointed to the readership in Russian and other Slavonic languages in 1889, he was raised to the rank of professor in 1900. Apart from the Slavonic languages, in which his scholarship was unique, he had a vast acquaintance with literature in general. He was educated at Tonbridge, and matriculated at Corpus, Oxford, but migrated to Oriel on election to a classical scholarship. Among his publications was a popular account of Slavonic literature.

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MR. JAMES RHOADES affords a case of an emeritus schoolmaster happily able for many years after his retirement to devote himself to the Muses. Recently he was the bard of the evening at the Omar Khayyám dinner, and contributed some characteristic and witty verses, which he declaimed with effect. I believe it is some dozen of years since Mr. Rhoades ceased to instruct sixth-form boys at Sherborne. Prior to his Sherborne days, he was at Haileybury, which is still proud of its connection with his verse. Mr. Milford says of him: "Mr. Rhoades's power of acting and his face-play were as perfect as the discipline which he kept." He was "full of delicious fun."

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THE death of Dr. William Torrey Harris, late U.S. Commissioner of Education, was reported in the *Times* of November 9th. An interesting article on Dr. Harris by Mr. H. W. Horwill is published by the *Westminster Gazette*, which closes with the words: "It is for his long and devoted career as an educational leader that he will be permanently remembered." He was born in 1835, and after leaving Yale without a degree migrated to St. Louis, where he was in turn shorthand teacher, school principal, assistant-superintendent, and (in 1867) superintendent of the popular education of the city. He was a pioneer in many ways. He started the first public kindergarten in America, and contributed largely to the distinction of the proper functions of elementary, secondary, and advanced schools as now observed throughout the United States. He was also a leader of philosophic thought in America, and edited the *Journal of Speculative Philosophy*, the first American philosophical magazine. After his return to New England he was appointed Commissioner of Education in 1889, and superintended the printed reports of the bureau, of which Sir R. Morant says: "They have probably done more than any other single agency to encourage the comparative study of the science and art of education, and of the various systems of educational administration now in force in the different countries of the world." Dr. Harris retired from office in 1906.

ONLOOKER.

EDUCATION IN INDIA.[1]

By Prof. MICHAEL E. SADLER, M.A., LL.D.

FOR various reasons the problems of Indian education are becoming, year by year, of more absorbing interest to the student of Imperial affairs. Education is no longer the Cinderella of our political science. We realise that the word, dusty with misunderstanding, means something far higher than mechanical routine. It signifies an attempt to touch the very springs of national life. Educational policy, rightly comprehended, is the central work of statesmanship. And the welfare of the peoples of India is one of the cardinal obligations of our race.

The instinct which turns our thoughts insensibly towards the crucial issues of the future is turning them towards the East. Schopenhauer's prophecy, written in Dresden nearly a hundred years ago, is coming true. The influence of the East is penetrating our thoughts not less deeply than did the revival of Greek literature the thought of Europe in the fifteenth century. We feel the power of the East in world-politics, in religious thought, in philosophical speculation, in literature, in art. And to us in Great Britain there can be no heightened sense of the significance of the East to Europe without a quickening of our interest in India. India comes ever nearer to us as communications grow more rapid, illus-

1 "Progress of Education in India, 1902-7." By H. W. Orange, C.I.E., Director-General of Education in India. 2 vols. (Calcutta: Superintendent Government Printing, India, 1909.) Vol. i., 3s. 9d.; vol. ii., Maps and Statistics, 4s. 6d.

trations more vivid, world-issues in politics more focussed and defined. And yet, in contrast, the real life of India, its mode of thinking and the infinite variety of its need, seems to become more inscrutable to us as out of the hazy distance of romance they grow distinct before our half-unwillingly arrested attention.

Mr. Orange's work, therefore, is opportune in the time of its appearance. We are better prepared than heretofore to appreciate its meaning. It comes to us not as a mere official report—a book which is not a book—from a remote place, and with the unfamiliar, fusty smell of an Eastern printing press, but as a document of urgent interest, bringing a message and an appeal. This is the first quinquennial report of the progress of education in India which has appeared since Mr. Orange left Whitehall to take up the duties of the new office of Director-General of Indian Education. It is not, indeed, the first-fruits of his stewardship. Other volumes of reports, most of them interesting and some of them vivid, have already appeared under his direction. But this is the greatest of them all. Let us say at once that it is the best of all the quinquennial reports hitherto published. It has mind in it. The arrangement of topics is masterly. The perspective is clear, the proportions just, the style usually tense and firm. There is no fumbling with blocks of statistics, little hack-work or padding. Parts of the book, as might be expected, are better than others, because the editor has had to draw upon the contributions of many writers, not all of whom have the power of giving a clear-cut outline to their views. But the reader feels that the whole of the report, or nearly the whole of it, has passed through the co-ordinating brain of the editor-in-chief. There is order, balance, precision in the book (not the mechanical precision of the literary carpenter, but the intellectual precision of a mind which knows what it does not know and has decided what to leave out) to a degree which is rare in official publications. What is still rarer in reports, this one has in it the force which makes a deeper impression on the mind at the second reading than at the first. For anyone who wishes to clear his thoughts as to what may be called the mechanics of Indian education, this is the book. It ought to be on the shelves of every public library in the United Kingdom.

"The mechanics of Indian education." The words are not meant to disparage Mr. Orange's work. True it is that in all grades of official education in India mere mechanics are apt to loom too large. But no description of Indian education can be true to its subject unless it delineates the sharp outlines of a huge machine. To discuss the difficult problems which lie in the background of Indian government; to analyse the psychological conditions under which Indian administrators have to do their work; to measure the intensity of the new social forces which Indian education has helped in stirring into movement and with which Indian educators have to cope; all these things lie outside the special duty of the Director-General in framing this report. The attentive reader sees that these intricate and even menacing questions are in the editor's thoughts. His view of them lies behind his treatment of the subject, and has determined his selection of evidence and given colour and intensity to his argument. But the work gains by its self-imposed reserve. And the perusal of it will send to other sources of information, perhaps even to India itself, many of those readers who desire not merely to know more about the external form of educational organisation in India, but to realise the atmosphere of opinion in which the organisers are at work. And such readers will not rest content with the knowledge of opinion. They will desire to penetrate more deeply into Indian sentiment, knowing that (as Mark Pattison said long ago) "deeper than opinions lies the sentiment which predetermines opinion," and that "what it is important for us to know, with respect to our own age or any age, is not its peculiar opinions but the complex elements of the moral feeling and character in which, as in a congenial soil, opinions grow."

So much in comment upon the value and seasonableness of the report. The reading of it leaves a number of impressions vividly upon the mind. It recalls to us India's debt, and ours, to the administrative energy of Lord Curzon. He was the first of Governors-General effectively to realise the dynamic force of education in the organised work of Indian government. To him is the credit of having realised the urgency of India's educational need, and of having taken vigorous steps along the road which seemed to him the path of administrative duty and of businesslike organisation. Mr. Orange's report is not, in the technical sense, dedicated to Lord Curzon. But Lord Curzon is the man without whose untiring industry in the highest office of government the great changes chronicled in this report would not (at least in their present form) have come to pass.

A second impression is that, in India as elsewhere, financial capacity has a great word to say in fixing the speed and limits of educational advance. Without the inner growth of spiritual and social ideals in a people, mere expenditure upon education can indeed accomplish little. But, granted that growth, it is the Treasury much more than the educational officer that fixes the degree with which official education grapples with the new needs of a people. Gradually, it is true, the growth of opinion (world-opinion, even more than merely local or even national opinion) affects the attitude of mind of the Treasury. But the Treasury is slow to move. Its tradition is against moving until it is obliged to move. Its way is not to anticipate educational needs, but to deny their existence as long as it can, and to act only when it is compelled to act. But the highest art in the educational policy of a nation is to anticipate needs, to be beforehand with them, to guide

nascent aspirations by favouring provision of well-planned intellectual discipline and opportunity. Our English educational history is full of missed opportunities, of failures on the part of the State to look ahead and to provide in time the kind of educational organisation which the nation was about to need. The same is true of India. There, as here, the Treasury (for reasons partly wise, partly unwise; partly sufficient, partly insufficient) has failed to do soon enough what the growing and changing needs of the people required. Educational policy has been stingily thwarted by a too narrow view of finance. Education, from the Treasury point of view, has been traditionally regarded as "unproductive" expenditure. The old taint of a too commercial (a mistakenly "commercial") and of a too individualistic political economy has clung to its educational theory. The presuppositions of it have been fallacious. The Treasury mind has never, here or in India, fully realised that a wise and generous educational policy must look ahead, must be venturesome, must stake much on the future, and is in essence capital outlay upon a scheme of development. What Bacon said about the planting of colonies is true of the planning of education: "It is like the planting of woods. You must make your account to lose almost twenty years' profit, and expect your recompense in the end." Indian education has never had enough money spent upon it. It is anæmic for want of proper subsidy. It is in great measure mechanical and sterile because it has been virtually starved. Whether any more generous treatment of it was financially possible is indeed a difficult question. Other claims upon Government were in themselves an exhausting drain. But the fact remains that Indian education never has had enough money spent upon it. If this financial restriction of it was inevitable, it is one of the tragedies of the world's history that Western civilisation roused India without giving India the educational preparation which that momentous change required.

The third reflection which Mr. Orange's report provokes is that the educational ideas dominant in Great Britain in one decade become dominant in Indian administration a decade or so later. The ideas take time to travel, or rather to realise themselves at so great a distance from their base. In the earlier days of English education in India, evangelical ideas prevailed. Scotsmen were in the highest posts of Indian government, and Scotsmen believed in education with an evangelical flavour. This is said with no meaning of contempt. Far from it. The English-speaking world owes an incalculable debt to the Christian zeal of the educationally minded Evangelicals. We still see the same influences at work in some of the Christian missions in India. But the Evangelical was by temperament something of an optimist. His creed had a gloomy side, but he was sanguine in his psychology. And he honestly believed that a cheap education, if only it contained the necessary formulas, would be a civilising, a moralising education. Within limits he was right. But he applied his view without discrimination and with too little regard to the facts of human nature. Then came the reaction—which was Macaulayism. Intellectualism took the place of religious zeal—intellectualism warmed by the heat of passion for social betterment and for individual freedom. Macaulayism left a deeper mark upon the machinery of Indian education than upon the realities of Indian life. Then, when the pristine enthusiasm of Macaulayism faded away, the spirit of Robert Lowe entered into possession. No one man ever did more harm to English elementary education than Robert Lowe. He had all the logical dexterity, and all the practical obtuseness, of the academic mind. He was an amateur who believed himself to be an expert. By nature a university don, he prided himself upon his insight into economics—the science in which donnishness is the most mischievously misleading. His educational policy was based upon political economy elaborately misunderstood. He invented "payment by results," which is a device for assessing the value of a spiritual process by the methods of an actuary. And in due course the patent method of "payment by results," a method attractive by its delusive simplicity to the Treasury mind, infected the educational administration of India. In Great Britain, Lowe's logic fell into disrepute twenty years ago. It is now going out of fashion in India. And Mr. Orange's report records the painful beginnings of an attempt on the part of Government to replace it by something better.

Within the compass of a brief review it is impossible to summarise the multitudinous points of interest which prick the attention of the reader of this report. The present writer's copy of the book is scored with pencil marks which direct attention on almost every page to some matter of importance. After all, the best thing that any review can accomplish is to send more readers to the book itself. It must suffice to say in conclusion a few words as to the magnitude of the task with which educational administrators in India are contending. Mr. Orange's report deals with an area of 1,118,566 square miles, and with a population, in India and Burma, of 241 millions of inhabitants. These stupendous totals baffle the thoughts of the European reader. And yet nearly half a million of square miles of Indian territory and more than forty millions of the Indian population are expressly excluded from Mr. Orange's review. One thinks of the haunting lines in Rossetti's sonnet:

> And, leagues beyond those leagues, more sea.

Upon the education of this immense region, the Indian Government annually spends at present a little more than threepence halfpenny per head of the population. In England and Wales public authorities spend, per head of population, almost exactly as much every week as the Indian Government spends in the course of a year.

NATURAL HISTORY OF LANGUAGE.[1]

A BOOK to sum up the present state of linguistic study has long been wanted. For many years Dr. Peile's compendium held the field; but this has been long out of date, and probably the author did not care to revise it while knowledge was rapidly increasing. For the last twenty years, however, linguists have been investigating details, since Brugmann's work has apparently done nearly all that can be done to define the principles. The only notable advance has been the opening of a new vista in Bréal's "Semantics," the study of meanings and of psychology as applied to language. This beginning, however, has not been followed up. There are also murmurs heard on the subject of phonetic law, which the school of Brugmann declare to be invariable; but limitations have had to be set to this which amount to a denial of its invariability. Time and place were admitted to limit it by Brugmann himself; now we see that the limits are so narrow that it is fairer to allow that there is something arbitrary, or conscious, in the course of sound-changes; and if so, phonetic law is not the same as natural law, which is not subject to the influence of living beings, conscious or arbitrary. Our terminology needs to be remodelled in this part.

Prof. Tucker has stepped in with a summary book, intended to describe the present state of philological research. He does not waste time over the origin of language: a fascinating speculation, but unfruitful for the student. He defines his terms, then deals with the mechanism of sounds, the relation of speech to writing, and the classification of languages; gives a general survey of the languages that exist; and discusses the original seat and distribution of the Indo-Germanic branch. Phonetic change and phonetic law, etymology, changes of meaning, and the development of language, complete the book.

Prof. Tucker has gone to the best authorities all through—we have noted only one serious omission, which Prof. Tucker has made in common with all other writers, Payne's treatment of the American languages in his "History of the New World." He gives their results fairly and clearly, and we have pleasure in acknowledging that he has made many things clearer to us than they were before. We may direct attention to his sections on phonetic law, on the origin of letters, and on the origin of tones. We have not found any account of the Cretan script, which is a matter of great importance; and we read with a shudder the awful names of racial characteristics on p. 235: why smooth-haired and woolly-haired will not do as well as Leiotrichi and Ulotrichi, we cannot understand; and so with the rest, which all have to be explained, and learnt by heart by those who do not know Greek. But the book is well done, and will probably hold its own for a long time.

[1] "Introduction to the Natural History of Language." By T. G. Tucker. xii+466 pp. (Bl..ckie.) 10s. 6d. net.

EDUCATION IN RUSSIA.[1]

THE first thought that occurs to the mind on closing the latest special report of the Board of Education, of nearly six hundred closely printed pages, is how the author found time, while engaged as an inspector of schools in Wales, to collect and classify the enormous amount of information here given to us; the second is one of regret that the life of a man so gifted should have been cut short at an age when many men are still looking forward.

This volume is not likely to make so wide an appeal as many others issued under the auspices of the Board of Education. There are fewer people interested in the problems of primary education in Russia, or in the proposals for the reorganisation of the universities of that land, than in the more practical questions that were dealt with in some of the earlier volumes of this valuable series. But the student of educational progress, the politician seeking for the solution of pressing problems, and the teacher who is alive enough to wish to know how others deal with the various puzzles that worry him from time to time, can scarcely afford to neglect the reading of one of the most thoughtful and scholarly contributions to educational literature that has been made in our time.

The account of Russian education is brought down to the end of the year 1904. Since that time a new epoch has opened, but there have been few changes as yet to alter materially the conclusions arrived at by Mr. Darlington, or to render his statements incorrect except in a few details. The necessary corrections are supplied in a prefatory note. The scheme of the book is logical and comprehensive. A preliminary section gives a chronological account of the history of education in Russia, showing how the disconnected and inconsistent policy pursued has been largely the outcome of the personal whims and fancies of successive Emperors. This is followed by a sketch of the position and organisation of education as it existed in 1904, and is accompanied by a series of valuable appendices dealing with the learned institutions and societies, curricula of various types of schools, and other allied matters. Probably the most interesting and valuable chapters are those which deal in detail with the various administrative and pedagogic problems of the different classes of institutions, primary, secondary, university, technical, and commercial. Some very curious, and at times amusing, information is given in connection with these questions, and the account of the secular Sunday schools with their staffs of voluntary teachers, of the position and character of private schools, of the societies for the encouragement of home reading, and of the condemnation, not merely of corporal punishment, but of marks and other forms of reward, will provide an abundance of interesting reading.

[1] Special Reports on Educational Subjects. Vol. xxiii. [Cd. 4512] (Wyman) 2s. 5d.

Those unacquainted with the character of the Russian peasant will be surprised to learn of his love for reading and his thirst for education. Students are turned away from the secondary schools for want of room; children in primary schools in country districts have to be driven out of the building or dismissed by the teacher putting out the lamp and refusing to give any more instruction; poor boys starve themselves "to get learning," and buy their wretched food and shelter with what they can earn out of school hours.

In the past the practice of the Government has been dominated by the fact that they wished to train servants for official appointments rather than to enlighten the people. The only avenues to official or professional renown, the only door into the university, was the leaving certificate of the secondary school. This, together with the fact that exemption from a certain period of military service was only to be gained in the same way, may account in part for the desire of the people to avail themselves of every chance they can get of raising themselves to a higher educational level. Though such a system is not without its evils, it is perhaps the only one open to a great non-democratic empire in the initial stages of educational enterprise.

Mr. Darlington's exceptional power of getting at fundamental principles and presenting an impartial statement of a controversial subject is well seen in his account of the controversy over the teaching of classics. The arguments on both sides, as advanced by Russian thinkers, are set forth with the lucidity and gravity of a wise and unbiassed investigator, and are of great interest in view of the controversy over the same subject that still continues to agitate the minds of many of those who are responsible for the curricula of our own secondary schools.

There is no "religious question" as we understand it, because the idea of a purely secular education is repulsive to the mind of the Russian peasant. At the same time there is a religious question of a different type with which the gifted author shows an acquaintance so intimate that it could only have been acquired by long and patient study. The tolerance of thought and spirit with which the question is treated is rare indeed in those to whom we are obliged as a rule to listen in the discussion of such topics. We append a few paragraphs of special interest.

Sunday and evening schools, especially the former, constitute an increasingly important part of the provision for primary instruction in Russia. . . . The curriculum of the Sunday schools is in any case the same as that of the ordinary primary day schools; but the course is of no specified length, the pupils, who are of all ages, staying as long as they choose and leaving when they choose. Mixed schools are rare, and schools for girls and women greatly preponderate over those for men and boys. The teachers are always voluntary workers, and are often unpaid. It is a remarkable fact, and one which deserves to be recorded to the honour of the teaching profession of Russia, that though all girls who have completed a course in the secondary day schools have the right to teach in primary schools, and though many Russian young ladies belonging to the professional and leisured classes do take advantage of this right to help in Sunday-school work, the great bulk of the teaching in the Russian Sunday schools is done by men and women who are engaged throughout the week as teachers in the secondary and primary day schools, and give up their only day of rest to work in the Sunday schools. In some cases they not only give their time and labour, but their money also, for in some of the Moscow schools it is the teachers who pay for the pupils' refreshments!

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A feature of the internal organisation of the Russian gymnasia and real-schools which calls for special mention is the tutorial system. This system differs in some important details from that which is known by the same name in some English public schools. The class tutor (*klassnyi nastavnik*) in Russia exercises many functions which in England are undertaken by the form master. One such tutor is attached to each class, the person appointed to the office being generally chosen from among the masters who give the largest number of lessons to the class. While the duties of a teacher in a Russian school are confined to watching over the progress made by his pupils in the particular subject or subjects for which he is responsible, the class tutor is supposed to supervise the instruction of the class as a whole, to take an interest in the general intellectual and moral development of each pupil, and with this object to enter into relations with the class masters on one hand, and with the parents of the pupils on the other. The class tutors have in particular to see that the pupils of their class attend the lessons regularly in all subjects, and to keep a day book in which are entered notes of their progress and conduct.

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By the law of June 1st, 1882, supplemented by that of June 12th, 1884, no child is allowed to work in a factory under the age of twelve. Children between twelve and fifteen years of age may not be employed for more than eight hours a day; and owners of factories employing such children are bound to allow them the opportunity of attending school for at least three hours a day, or eighteen hours a week, except in the case of those who hold a certificate of having completed the course of a primary school.

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A considerable proportion of those receiving, not only primary but secondary and higher education in Russia pay no fees at all. In the first place, all persons actually in the service of the Ministry of Public Instruction in connection with secondary or primary schools have the right to free instruction for their children in any gymnasium, real-school, or technical school under that Ministry. But, apart from this, a certain proportion (generally about 15 per cent.) of free places are reserved for deserving children of poor parents in every secondary school. This is such a characteristic feature of Russian education that even the private schools commonly follow the example of the State in this respect.

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The poverty of the people affects the school at many points. Its first and most direct consequence is to make the rural school a winter school only. The sternness of the struggle that has to be waged with the forces of nature for the bare means of subsistence is such that the children can be spared for school only so long as it is impossible to labour in the fields. Directly the frost

breaks up and nature awakes from the sleep of winter, the schools must close; they are therefore open only from October to May, say for 140 days at the outside. The shortness of school life—in most cases not extending beyond three years, and often even falling short of that—is also due to the same cause. Children cannot under the conditions of the Russian climate be sent to school earlier than eight years of age, nor can they be kept there beyond twelve or thirteen; the particular ages during which they are actually at school depend very much on local and individual circumstances. Finally, in connection with the question of poverty, it should be pointed out that it costs much more to equip a child for school in Russia than in England, since the need of warm clothing and boots is so much greater; and this expense is often beyond the reach of the poorest parents.

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"In every gymnasium," says Count Kapnist (*Klassitsizm*, p. 38), "especially in the provinces, there are a number of pupils who, from the time they reach the sixth, the fifth, or even the fourth class, earn their own means of subsistence by coaching (*repetitorstvom*) and other occupations. These young people, who are often no more than children, belong to the poorest families, live under the most unfavourable conditions, and spend two, three, or more hours a day in assisting their more fortunately placed companions in their school tasks, whilst at the same time pursuing their own studies, going through and completing their course."

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The State origin and bureaucratic character of the Russian universities go far to explain another distinctive feature of the university system—namely, its lack of corporate life. The students of a Russian university are conceived by the legislature as individual units for whom the State provides higher instruction. The professors are State officials whose function it is to impart information on a given subject. The idea of the university as a corporation within the State uniting teachers and taught by means of scientific interests common to both is absent. The idea of the students as forming by themselves a corporate body is not only foreign to the whole spirit of Russian legislation, but is expressly guarded against by the university regulations. The idea of the professorial body as a corporation with common interests is not entirely absent, but it is not strongly developed, and the history of the last twenty years has tended to weaken rather than strengthen it.

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We may name as the three most salient characteristics of Russian university students the sense of comradeship, the sense of personal dignity, and the conviction of the special vocation of educated youth for the regeneration of the society of the future. It need hardly be pointed out that these characteristics are sufficient in themselves to constitute the Russian student a standing problem in a State which does not permit unrestricted liberty of thought, in which the rights of the individual as against itself are imperfectly acknowledged, and in which freedom of association is hedged about with all manner of restrictions, and, so far as university students are concerned, is entirely prohibited.

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Within the buildings, courts, and grounds of the university the organisation of students' reading-rooms, dining or food clubs, and also of theatrical representations, concerts, balls, and other similar public assemblies not having a scientific character, is absolutely forbidden.

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Students are forbidden to hold any meetings or gatherings for deliberation in common on any matters whatsoever, or to deliver public speeches, and they are likewise forbidden to establish any common funds whatsoever.

THE METHODS OF MATHEMATICS.[1]

By George A. Gibson, M.A., LL.D.
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The position assigned to mathematics in the educational system of every civilised country seems to mark it out as an essential element of mental culture, but an examination of the arguments that have been put forward from time to time to justify this position reveals a diversity of view that is at first sight disquieting.

Of those who acknowledge the value of mathematics there are many who see that value almost solely in its usefulness, in the help it brings to other sciences. Not unnaturally, those who are absorbed in the work of applied science are apt to turn away from the more abstract developments of modern mathematics; even the men whose special pursuits call for constant applications of mathematical processes, as in physics and engineering, can hardly be blamed if they lay special emphasis on those elements of a mathematical training that are of immediate application to their daily work. Yet it is not this aspect of mathematics that is usually present to the professional mathematician when he seeks to uphold the position of his subject in an educational system.

Mathematics may be assigned its place for a different reason. To those who reject the argument from utility, mathematics is not the humble auxiliary of other sciences, but is itself the one genuine science; it often comes to the aid of other sciences, but does not depend for the justification of its existence on the help it may be able to bring. From the adherents of this view come the familiar arguments for the disciplinary value of a mathematical training in which deductive logic is given a prominent place.

The question naturally arises whether these two aspects of mathematics are incompatible. To the teacher, whether in school or in college, the question is of prime importance; for the whole scheme of study and the methods of instruction will be found in the long run to be determined by the general attitude that is taken up with respect to the value of the subject. At the present time there is considerable uncertainty in the minds of teachers regarding the methods of school mathematics, and many of the older men are disposed to look unfavourably on recent changes as tending to impair the disciplinary effects of a mathematical training.

In the recent discussions on elementary mathematics the guiding principle that has emerged seems to me to be the explicit recognition of the essential part that observation and induction play in the acquisition of mathematical knowledge. With this recognition is associated the idea that in the early training of the pupil it is scientifically unsound and practically hurtful to emphasise the deductive element; his training should, in its broad outlines, be modelled on the course that the historical development of

[1] Extracts from the inaugural address delivered on October 11th, 1909, in entering on the work of the Chair of Mathematics in the University of Glasgow.

mathematics has followed. Mathematics has now reached the stage in which it is possible to treat it as a deductive science, but it does not follow that it is either necessary or possible to teach it to beginners entirely as a deductive science. To do so is to mistake the meaning of its history and to deprive it of its place as an exponent of scientific method. Observation, classification, and induction are essential elements of scientific method, and these are well illustrated in the historical development of mathematics. The recent discussions have shown that, in the opinion of many experienced teachers, it is not only possible, but necessary, to make full use of these methods in mathematical teaching, and the conviction is widely held that they are of special importance in geometry, the branch of elementary mathematics where deduction has so long had the leading place. The excellence of the intellectual discipline to be obtained from a study of Euclid is, in my opinion, not to be questioned, but I think there is no doubt that it is contrary to all scientific order to take Euclid as our guide for an introduction to geometry. It is necessary for the pupil to acquire a knowledge of the forms of material objects before he can reasonably be expected to demonstrate the geometrical properties that are implied in the definitions of geometrical bodies. In acquiring this knowledge observation and classification are essential, and deductive reasoning will have little place. The knowledge thus gained may be quite entitled to the name of scientific; if the course is carefully planned and carried out, it will be quite possible to obtain a system that is not a mere aggregate of isolated details, but a coherent structure. The importance of a practical course is now generally recognised in its bearing on deductive geometry; its value, however, in relation to the appreciation of scientific method is equally great.

The early stages of algebra are usually found to be very difficult, and are too often of little scientific value; the subject is more abstract than geometry, and the temptation to let the teaching degenerate into a mere mechanical application of rules is very great. I cannot but think, however, that the spirit of De Morgan's chapter on "The Study of Algebra" in his book "On the Study and Difficulties of Mathematics," written so long ago as 1831, is in full accord with scientific method, and is worthy of being more completely realised in practice than it has yet been. I cannot refrain from quoting a few sentences that indicate his view of the way in which a reasonable conviction may be obtained. After pointing out the value of *mathematical* induction, he says: "The beginner is obliged to content himself with a less rigorous species of proof though equally conclusive as far as moral certainty is concerned. Unable to grasp the generalisations with which the more advanced student is familiar, he must satisfy himself of the truth of general theorems by observing a number of particular simple instances which he is able to comprehend. For example, we would ask anyone who has gone over this ground whether he derived more certainty as to the truth of the binomial theorem from the general demonstration (if indeed he was suffered to see it so early in his career), or from observation of its truth in the particular cases of the development of $(a+b)^2$, $(a+b)^3$, &c., substantiated by ordinary multiplication. We believe firmly that to the mass of young students general demonstrations afford no conviction whatever; and that the same may be said of every species of mathematical reasoning when it is entirely new."

There can, I think, be no doubt that it is now generally recognised that it is in accordance with true scientific method to keep the purely deductive element in the background so far as the early training in mathematics is concerned, and that by so doing the general methods characteristic of scientific procedure are more fully illustrated. This recognition, however, does not imply that the characteristically deductive side of a mathematical training is to be neglected; it means rather that deduction, which is surely a scientific method, will be used with a fuller comprehension of its place and even of its necessity. The time and the manner of the passage to deduction are not to be easily decided; much depends on the pupil, and it is one of the hardest tasks of the teacher to determine the appropriate correlation of methods. Induction is essential as an instrument of research, but deduction is also essential to the systematic development of mathematical science, and no training in mathematics can be considered satisfactory that does not show the complete process by which mathematical knowledge advances from the stage of observation to that of a science in which deduction plays the principal part in the co-ordination of its contents.

In this conception of elementary mathematics we have the leading characteristics of scientific method, and have them, as I think, in great simplicity. It is on this ground that the study of mathematics seems to me to be a valuable, if not indeed an essential, factor of modern education. Science has effected a great revolution in the material conditions of life, but it has also produced a profound change in the mental attitude of all thinking men. Our civilisation is not intelligible unless account is taken of the influences, material and intellectual, that are due to the progress of science. The right study of mathematics, even in its humblest forms, offers an easily accessible road to the appreciation of the fundamental characteristics of scientific method.

It is of interest to note further that the more recent methods of treating elementary mathematics, which are inductive rather than deductive in their character, lead in a natural manner to an appreciation of some of the cardinal ideas and methods of pure mathematics. Thus the notion of a continuously varying function, the conception of a limit and the method of successive approximation cannot fail to be impressed upon a pupil who has been adequately disciplined in graph tracing.

So far as regards general education, I am disposed to think that, in view of the claims of other subjects, the range of mathematics prescribed for the leaving certificate of the Scotch Education Department may at present be considered as sufficient to ensure a fair understanding of those ideas that mathematics contributes to general culture. If that range is satisfactorily covered, I do not think that mathematics should be made compulsory on candidates for a degree in arts, and I therefore cordially welcome the provisions of the new Ordinance that allow alternatives.

The case is altered, however, when we come to consider the claims of science, especially of what is called applied science. The complexity of the problems confronting modern scientific research, with the vast accumulation of detail so characteristic of it, demands a careful training in the discrimination of the essential from the accidental in the search for the underlying principles that co-ordinate or explain the details, and in the selection of the most general points of view from which to survey the field that has been worked. In this training, quite apart from the direct utility of the more advanced mathematical processes, much assistance is to be obtained from a mathematical course; the processes of thought involved in any serious study of mathematical or physical phenomena have much in common with those developed in the

study of mathematics. It is the special task of the teacher to determine the extent to which the rigorous methods of pure mathematics are to be carried. Rigour is relative, not absolute, and will always be conditioned by circumstances of subject and person and even by the prevailing fashions of the day. Restrictions corresponding to the nature of the subject and to the intellectual development of the student have always been recognised as essential. Many assumptions are either tacitly or explicitly made, fundamental theorems the demonstration of which offers special difficulty are frankly taken for granted until the necessity or the expediency of their demonstration arises, and the logical completeness of a course is therefore impaired. But progress is all but impossible on any other lines, and much may be gained from demonstrations that are in parts confessedly incomplete. The real danger to the student lies in a demonstration that has the appearance of being complete and yet conceals serious assumptions. It is a great advantage that in mathematics general theorems can often be tested by particular cases that are easily handled, and practice of this kind will often produce that working conviction which is so essential for fruitful applications. One is reminded in such cases of the saying attributed to D'Alembert, "Go forward and faith will come to you."

Up to this point I have been considering the methods of mathematics almost solely in relation to the function of mathematics as a factor of general education or as the auxiliary of the applied sciences in their more elementary stages. The considerations that I have thus hastily sketched seem to me to involve the conclusion that this phase of mathematics is to be justified neither by its usefulness alone nor by its disciplinary power alone, but by the degree to which the training combines these elements. In a properly balanced mathematical course the characteristic features of scientific method will receive due recognition, and the mental horizon of the learner will be gradually enlarged; but the choice of material and of method will prepare him for the application of mathematical processes in various fields, and the study as a whole will powerfully react on his mental development.

It must not be forgotten, however, that the claims of mathematics are not exhausted by such developments as I have indicated. I have deliberately avoided all reference to what is called pure mathematics, and have confined myself to those aspects of mathematical study that are of general interest. It is difficult for anyone who is not a professed student of mathematics to realise the position of the subject in its modern developments. The great critics of the nineteenth century were not less successful in extending the boundaries of mathematical science than in securing by a just title the territory acquired, and to-day the range of subjects that fall properly within the domain of mathematics has an extent that the contemporaries of Newton and Leibnitz never dreamed of. As the result of their labours mathematics ranks as a science worthy of cultivation for the intrinsic value of the conceptions which it embodies, for the appeal it makes to the constructive imagination, for the light it casts on the processes of thought, and for the inherent beauty of form that characterises many of the theories comprised within its domain. But any attempt at reviewing, within the limits of time allotted to me, the present state of the science would certainly fail to give any adequate conception of the nature of its contents. To the mathematical student, however, the assurance can be given that he need not fear that the science is complete and that all the problems it presents have been finally solved. Abstract as these investigations often are, there is ample room for the application of those general principles of scientific research which his earlier training will have helped to develop, and the final test of his mathematical powers will be found in the success with which he extends the scope and methods of the science.

EXPLORATIONS OF THE UPPER AIR.[1]

FREE MANNED BALLOONS.—The scientific investigation of the conditions of the upper atmosphere was begun about the middle of the eighteenth century by Bouguer, a French Academician, during a geodetic expedition to Peru. He fixed the height of the freezing-point in various latitudes by means of observations on the slopes of mountains. The first scientific manned balloon ascent was made by Jeffries, November 30th, 1784, from London. The balloon car contained a thermometer, barometer, hygrometer, electrometer, mariner's compass, and bottles filled with water for obtaining samples of air. The rate of fall of temperature was found to be 1° F. per 360 feet. No change of electrical conditions was indicated. Samples of air were sent to the Royal Society, but were apparently not analysed; a paper on the results was read before the society, January, 1786. The observations of Jeffries compare favourably with those made until the adoption of aspirated instruments. Some time then elapsed before the next ascent for purely scientific purposes was made. In 1803–4 Robertson, a Belgian physicist, made three ascents from Hamburg and St. Petersburg. The third was made under the auspices of the Russian Academy, which proposed to examine the change in the rate of evaporation of fluids, change of magnetic force and magnetic inclination, and the increase of solar heat with increase of height. The Paris Academy of Sciences took up the investigation in the same year, and Biot and Gay-Lussac together (August 24th, 1804), and later Gay-Lussac alone (September 16th, 1804), made ascents from Paris to verify Robertson's St. Petersburg results, which indicated that the magnetic force diminished with increase of height. Gay-Lussac found the rate of fall of temperature to be 1° per 300 feet, and that the magnetic force increased with height.

No further investigation was made until 1850, when Messrs. Barral and Bixio made two remarkable ascents from Paris. They demonstrated the great thickness (about 15,000 feet) of some cloud masses, and noted that while the light from the sky was polarised, that reflected from the clouds was not. At 23,000 feet they encountered a cloud consisting of ice particles. The British Association first took part in the work in 1852, when Mr. John Welsh made four ascents from the Kew Observatory. The object of the ascents was to find the rate of diminution of temperature and change of humidity, to collect samples of air, and to examine the light from the clouds for polarisation. Recognising the probable effect of the sun on exposed thermometers, Welsh enclosed his thermometers in a polished metal tube through which air was forced by bellows, thus instituting the aspirated apparatus perfected later by Dr. R. Assmann, of Berlin. The thermometers were very sensitive, falling through 20° F. in eleven seconds on being taken from a warm to a cold room. He attained heights ranging from 4 to 7 km., and found that the temperature fell uniformly, until at a certain height, which varied on different days, the fall was arrested and the temperature remained practically constant through 600 to 900 metres. The uniform diminution was then re-

[1] From a Report to the British Association upon the Present State of our Knowledge of the Upper Atmosphere as obtained by the use of Kites, Balloons, and Pilot Balloons. Prepared by a committee consisting of E. Gold and W. A. Harwood.

sumed, but at a less rapid rate. The seasonal variation of the rate of fall of temperature was demonstrated. It was found that the light reflected from clouds was unpolarised.

The experiments in connection with the British Association were continued by a committee appointed at the Manchester meeting in 1861. The experimental work was undertaken by Mr. Glaisher, who, with Mr. Coxwell, made twenty-eight ascents during the period July 17th, 1862, to May, 1866. The chief objects of the investigation were to find the laws of variation of temperature and humidity with height, and to examine the variation of magnetic force and electric potential.

Glaisher at first employed Welsh's aspirated thermometers, but noticing that these recorded the same values as the exposed instruments he discontinued the aspiration. Subsequent observations have shown that the agreement between the indications of aspirated and unaspirated instruments was due to faulty exposure in the balloon car. He took also maximum and minimum thermometers, ozone papers, and an electrometer lent by Prof. W. Thomson, of Glasgow (Lord Kelvin).

As the number of observations increased the conclusions drawn became more uncertain. To quote Glaisher's words: "It was found that those taken in the morning hours did not accord with those taken in the afternoon hours, nor did those taken at one time of the year agree with those taken at other times of the year."

In cloudy weather the rate of fall was 1° F. per 300 feet, but in clear weather 1° F. per 160 feet at first, and only 1° F. per 1,000 feet at six miles. Observations at night were made with the help of miners' lamps, when it was found that the temperature rose as the height increased. The results for humidity were similar to those of Welsh. At a height of five miles (8 km.) there was almost complete absence of water vapour. The time of vibration of a suspended magnet was found to diminish with increase of height, a result contrary to that of Gay-Lussac, but in agreement with that of Robertson.

In 1869 Glaisher made further observations to examine more closely the variation of temperature and humidity up to 1,000 feet. These later observations were the first obtained by means of a captive balloon. They indicated a decided diurnal range of temperature. The work was not pursued further in England, but interest was stimulated in France, and many ascents were made by MM. Flammarion, de Fonvielle, and Tissandier. In 1875 two ascents were made by Tissandier, Crocé-Spinelli, and Sivel, one of long duration (twenty-four hours) and the other to a great height (9,000 metres). The apparatus carried included a pump to draw air through tubes filled with potash for estimating the amount of carbon dioxide, a spectroscope for examining the water-vapour line in the solar spectrum, two aneroid barometers, one giving the pressure from 0 to 4,000 m., and the other from 4,000 m. to 10,000 m., two barometric tubes for registering the lowest pressure, and thermometers. This ascent resulted in the death by suffocation of Crocé-Spinelli and Sivel, and in consequence only one ascent was made in France between 1875 and 1878. The successful construction of the large Giffard captive balloon in Paris in 1878 gave a great impetus to aeronautical work in France. In 1879 the Paris Academy inaugurated its first series of ascents, and Tissandier made observations to verify the barometer height formulæ by means of photographs from the car, a method originally proposed by Le Verrier in 1874. In the same year (1879) the International Congress of Meteorologists at Rome passed several resolutions relating to the importance of balloon observations in meteorological investigation. In July, 1881, MM. W. de Fonvielle and Lippmann made an ascent after midnight, carrying only barometer and thermometer, and about the same time the investigation was resumed in England by the Meteorological Office.

The number of balloon ascents accomplished and the observations made had now become very numerous and widely distributed, but it was seen that the results were strangely discordant. No organised balloon ascents had taken place in Germany, though isolated ascents had been made since about 1880; but German meteorologists attributed the discrepancies to faulty instruments and methods of observation. Comparisons by A. L. Rotch in ascents from Paris and Berlin showed that Richard's self-recording thermometer registered 8° C. higher than a sling thermometer, and the latter 2° higher than a new aspirated thermometer designed by Assmann in 1887. These tests showed the necessity for the use of accurately specified methods of observation and thoroughly tested instruments in all countries. The doubt thrown on all previous observations caused the Prussian Meteorological Institute to inaugurate a series of experiments to repeat the work of Glaisher. Forty-seven ascents were made between June, 1888, and February, 1895. In these ascents the instruments were placed in a well-ventilated enclosure, and their indications were compared with those of instruments exposed as in earlier ascents. In four cases self-recording instruments were used. On December 4th, 1894, Dr. A. Berson rose to a height of 9,600 m., the highest level at which observations had been made, and later (in 1901) Berson and Süring rose to 10,800 m. On the latter occasion both aeronauts were unconscious at the maximum height, and revived only after the balloon had descended about 4,000 m. In Glaisher's famous ascent from Wolverhampton, September 5th, 1862, the last observation was made at 8,900 m., although the balloon was supposed subsequently to have risen 2,000 m. higher. Special precautions were taken to make the two series of ascents comparable, Berson going so far as to make an ascent from the Crystal Palace in September, 1898, a simultaneous ascent being made from Berlin. The final results showed that Glaisher's results for temperature were faulty, the error probably arising through insufficient ventilation. In the ascent of December, 1894, the temperature at the maximum height was −54° C. by the aspirated thermometer and −11° C. by the exposed thermometer. The results, together with those of Berson and Süring, and of a simultaneous *ballon-sonde* ascent, are shown for comparison in the table:

Height, metres	Fall of temperature °C. per 1,000 metres		July 31, 1901	
	Glaisher	Berson	Berson and Süring	Ballon-sonde
0–1,000	7·5	5·0	7·2	8·3
1,000–2,000	6·5	5·0	6·8	6·1
2,000–3,000	5·0	5·4	3·7	4·2
3,000–4,000	4·2	5·3	5·2	5·1
4,000–5,000	3·8	6·4	7·4	5·7
5,000–6,000	3·2	6·9	5·5	6·3
6,000–7,000	3·0	6·6	7·2	4·7
7,000–8,000	2·0	7·0	7·2	7·6
8,000–9,000	1·8	9·0	3·6	7·1

It will be noted that in Berson's observations there was no indication of the isothermal zone discovered by Teisserenc de Bort and Assmann. Later experiments with free manned balloons have been in most cases confined

to lower altitudes, and have been made principally for comparison with, and verification of, observations made by other means.

CAPTIVE BALLOONS.—After Glaisher's work in 1869, captive balloons were little used for scientific purposes until 1890. In 1876 Mendeléef proposed to construct a large captive balloon and to fit it with apparatus of his own design, and in September, 1889, tests of barometer-height formulæ were made by means of a captive balloon in Russia; but in general the shocks and jars sustained by these balloons owing to gusts of wind, together with their violent oscillations and frequent rapid rotation, rendered them extremely unsuitable for mercury barometers, while in winds of only moderate strength they refused to rise to any considerable height, and drifted along close to the ground. E. D. Archibald in 1887 proposed to employ a captive kite-balloon to get rid of the captive balloon's defects, and claimed to have obtained satisfactory results. The introduction of sufficiently rigid self-recording barometers and trustworthy recording thermometers and hygrometers, however, rendered captive balloon observations far more practicable.

The kite-balloon of Siegsfeld and Parseval, a more elaborate apparatus than that of Archibald, was first used to raise meteorological instruments in 1898 at Strassburg, and has since been used regularly at the Prussian Meteorological Institute, Lindenberg, to obtain observations in calm, or nearly calm, weather. At most other stations ordinary captive balloons have been used, and in weather when both kites and captive balloons are useless, small pilot balloons have been employed to determine the direction and velocity of the wind.

PILOT BALLOONS.—The use of small free balloons was first suggested by Le Verrier in 1874. In 1877 M. Secretan, of Paris, under the direction of M. W. de Fonvielle, sent up a series of small indiarubber balloons in order to investigate the changes of wind direction with altitude and to determine the heights of clouds. The method was quickly adopted in America, and before the end of 1877 it was decided to use these small pilot balloons regularly in Arctic work. They were also employed in 1879 by the French Academy in preliminary ascents to determine the paths which manned balloons would take.

In continuation of the investigation of the variation of wind with height, M. Bonvallet in 1891 dispatched ninety-seven paper balloons from Amiens, and sixty of the cards attached to the balloons were returned. The experiments were continued by Hermite during the period 1893–8, and about half of the balloons sent up from Paris were returned from within a radius of 100 miles. Subsequently these pilot balloons have been employed regularly with theodolites in determining the direction and velocity of the wind at various heights, and to continue the observations when kites could not be flown owing to calm weather, or when an opposing current prevented the further rise of the kite. They have, too, the advantage of reaching greater heights than kites.

KITES.—The first use of kites for scientific purposes was made by Alexander Wilson and his pupil Thomas Melville at Glasgow in 1749. In these experiments thermometers were raised to considerable heights. Three years later Franklin performed his famous experiment of collecting electricity with kites. In 1822–3 the Rev. George Fisher and Captain Sir Edward Parry, using self-registering thermometers, obtained temperatures by means of kites at different heights in Arctic regions. Some time later, in 1840, Espy, an American meteorologist, employed kites to verify his calculations of the heights of clouds from measurements of humidity. The experiments also extended to England, for W. R. Birt, of the Kew Observatory, flew kites in 1847 with the hope of obtaining the changes of temperature, humidity, and wind with height. In 1883–5 E. D. Archibald used kites to obtain the wind velocity, employing a Biram's anemometer, which registered the total amount of wind from beginning to end of the flight.

In 1885 Alexander McAdie repeated Franklin's experiments on Blue Hill, U.S.A., using an electrometer, and in 1891 and 1892 he measured the electric potential simultaneously at the base, on the slopes, and with kites above the summit of Blue Hill. About the same time L. Weber was making more extensive use of kites at Breslau, Germany, to collect electricity. About 1890 Wm. A. Eddy, after making experiments with various forms of kites, devised a modified form of the Malay tailless kite, and in 1891 used several of these to raise a minimum thermometer, proposing thus to obtain additional data for weather forecasting. The experiments were continued at the Blue Hill Observatory, and in 1894 the first continuously recording instrument was sent up. Later, the weight of the instruments was reduced and more efficient kites were devised. A report on the work being carried out at Blue Hill was presented to the International Meteorological Conference at Paris, September, 1896, and in 1898 the International Aeronautical Committee recommended the inclusion of the kite and kite-balloon among the apparatus of all the principal observatories. In the same year M. L. Teisserenc de Bort equipped a kite station at the Observatory of Trappes, near Paris, and kites were used by M. Rykatcheff at St. Petersburg. In 1901 Rotch made experiments with kites flown over the sea from steamships. In 1902 kite experiments were made by W. H. Dines on land and also over the sea from a small steam vessel, on the west coast of Scotland. The experiments were continued at Oxshott, and subsequently at Pyrton Hill, for the Meteorological Office. In the same year successful kite experiments were made by Berson and Elias in a cruise to Spitsbergen, by Köppen in the Baltic, and by Fassig, for the American Weather Bureau, in the Bahamas. Teisserenc de Bort extended his experiments to Scandinavia in 1902–3, and under his direction kites were flown day and night when possible at Hald, in Jutland, during nine months. The apparatus was then transferred to a Danish gunboat, and ascents were made over the Baltic. During this cruise the highest kite ascent up to that date was made, the height recorded being 5,900 m. During the autumn of 1904 Prof. Hergesell made a series of ascents from the yacht of the Prince of Monaco over the Atlantic, in the neighbourhood of the Canary Islands, and the Azores. These experiments were followed in 1905 by a similar expedition, organised by Teisserenc de Bort and Rotch, to the neighbourhood of Madeira, Teneriffe, and Cape Verde, and the expedition was repeated in 1905 and 1906. The experiments were extended at the desire of the International Committee to India in 1905, observations being made at Karachi in 1905, and subsequently at Belgaum. In 1907 a similar station was established in Egypt, and about the same time a station, at which daily ascents were to be made, was equipped at Glossop, in England. The upper-air observations obtained at the English stations, viz., Pyrton Hill, Glossop, Ditcham Park, and Brighton, are published in the *Weekly Weather Report of the Meteorological Office*.

BALLONS-SONDES.—The use of small free balloons to raise self-recording meteorological instruments was proposed in Copenhagen so far back as 1809. At that time, however, no satisfactory self-recording instruments were

available, and the idea was not taken up. It was revived in 1873 and 1874 by Jobert and Le Verrier, who proposed in this way to test barometer-height formulæ, and again by Mendeléef at the International Meteorological Congress at Rome, 1879. It was not until self-recording instruments had been considerably improved, however, that satisfactory observations became possible, and Hermite in 1893 was the first to put the idea into practical form. Satisfactory ascents were made by means of a varnished paper balloon, *L'Aérophile*, filled with coal-gas, but on the bursting of this it was resolved to construct a balloon of gold-beater's skin. With this second "aérophile," the capacity of which was 113 cubic metres, and weight 14 kgm., ten ascents were made by MM. Hermite and Besançon between 1893 and 1898. In 1893 also Prof. Hazen attempted similar experiments in America. The objection was raised that the results obtained in this way were subject to the same errors, due to insolation, as those of Glaisher in 1861–9. Consequently, a silk balloon, the *Cirrus*, capacity 250 cubic metres, and weight 42 kgm., was constructed, and made eight ascents from Berlin between July, 1894, and June, 1897. All the instruments were enclosed in an aspirated tube (a "Urania Pillar"), designed by Assmann. The highest ascent of the *Cirrus* was made in September, 1894, when the pressure fell to 50 mm. at 18,500 m., and the minimum temperature was −67° C.

During the progress of the German experiments negotiations were carried on to obtain the general acceptance of uniform methods of observation, and the interchange of instruments with the view of evolving the best possible type. In consequence, the International Meteorological Conference at Paris, September, 1896, appointed a committee, consisting of de Fonvielle, Hermite, Assmann, Erk, Hergesell, Pomortzeff, and Rotch, to organise a series of simultaneous international ascents. These ascents extended rapidly, and already in 1896 four manned and four registering balloons were sent up on the same dates from France, Germany, and Russia. In 1898 the ascents were extended to Austria and Italy, in 1899 to Belgium, and in 1901 to England.

Besides the work done in connection with the International Committee, extended series of *ballons-sondes* ascents were undertaken independently. Between April, 1898 and 1902, Teisserenc de Bort sent up 258 *ballons-sondes*, which attained heights of 11 km., and similar apparatus was employed in the Atlantic expeditions of Rotch and Teisserenc de Bort, and of Hergesell in 1902–5. Rotch made the first series of registering balloon ascents in America at St. Louis in 1905. In 1907 the International Committee at Milan, adopting the suggestion of Teisserenc de Bort, determined to carry out the observations on a much more extended scale in the northern hemisphere. The work was extended to Africa and India, and several stations in Great Britain began to take part regularly in the ascents. Almost all the countries of Europe had previously taken part in the monthly international ascents, made since 1901 on the first Thursday in each month, and these countries continued to participate in the extended series, which included ascents of several balloons on successive days at stated periods. The results are collected and published by the International Committee. In addition, special ascents have occasionally been made, such as those at Milan during the month of September, 1906, and at Manchester, June 2nd and 3rd, 1909. On the last occasion twenty-five balloons were liberated in twenty-four hours, and during the same period four balloons were sent up at intervals of six hours from most of the Continental stations.

HISTORY AND CURRENT EVENTS.

OUR American cousins have been celebrating this autumn the discoveries of Henry Hudson, after whom Hudson's Bay and Hudson River are named, and this in connection with the work of Robert Fulton, who launched his steamship on the Hudson in 1807. Of Hudson's life nothing is known except those four years during which he made his discoveries on the coasts of North America (1607–1611). That was a period when it was still considered possible to reach Japan and China by a north-west sea passage, and therefore to the navigators of those days all their discoveries appeared as failures. Now we not only know what they found, but have effectively occupied it, so that the continent of North America is in the possession of the "Anglo-Saxon" race, represented either by the British Empire or the United States of America.

JAPAN and China, which Hudson and others sought to reach by the western route, were reached first by sailing east, *via* the Cape of Good Hope, and afterwards by the south-west route round Cape Horn. And in our own days there are various routes to these then unknown countries, and they have entered into the world of European politics; or, rather, the world of Europe and the world of Asia have come into close contact, a contact so close that the deaths of Chinese and Japanese statesmen are events of interest to ourselves. Last October there died Chang Chih-tung, of China, and Hirobumi Ito, of Japan, and obituary notices of each appeared in our daily newspapers. Those biographies are worthy of study by way of contrast. The literary career of Chih-tung and the adventurous career of Ito are illustrative of the history of their respective countries during the last generation, and help to explain the difference in the development of the two nations.

CHANG CHIH-TUNG represented the conservative element in China, which, relying on its ancient learning, strove to prevent the incursion of new ideas. Ito represented the forward movement, which, under our own eyes, has revolutionised Japan, and given it such a start in the politics of the "Far East" that it is now on terms of equality with Western nations. But China, too, is abandoning its old ways, and, in characteristic fashion, is moving slowly, but perhaps all the more surely, towards other ideals than those of the past. In October there met, in each of its twenty-four provinces, a deliberative assembly, chosen, according to Imperial decree, by the inhabitants. What may come of this new departure we cannot of course tell, but it is noteworthy that China has at last entered into the list of nations that use, in whatever way, that appeal to the people which our King Edward I. first instituted on a national basis in 1295, on the ground that "what touches all should be approved by all."

THIS development of the Eastern nations and their continually closer connection with Europe has led naturally to a desire for more knowledge among Europeans of the conditions of Asia. We are, therefore, not surprised to note that there is to meet in July, 1911, an international congress in which "a good understanding, friendly feeling, and hearty co-operation among races and nations" will be furthered, and "special treatment will be accorded to the problem of the contact of European with other developed types of civilisation." In the same connection, it is also worthy of remark that the British Government in 1907 appointed a committee to consider the organisation of Oriental studies in London, and that the report of that committee has been issued. It recommends the establishment of means for studying Eastern and other non-European languages in view of the work of the British Empire in many parts of the world.

ITEMS OF INTEREST

GENERAL.

THE next general meeting of the Association of Public School Science Masters will be held, by permission of Dr. Gow, at Westminster School on January 13th, 1910. The president for the year is Prof. H. E. Armstrong, F.R.S., and he will take for the subject of his address "The Future of Science in our Schools"; it is probable that he will compare science teaching in England with that in America, a subject he has been studying during his recent visit to the States. Mr. Eccles (Greshams' School, Holt) will read a paper at the morning meeting dealing with the confusion which now exists in the symbols used in text-books on physics, and urging that some uniform system be introduced. There will be a public lunch at the Westminster Palace Hotel at 1.15, and in the afternoon papers will be read by Mr. L. Cumming (Rugby), upon the wisdom of teaching all boys geology or biology during some portion of their school life; by Mr. Cross (King's School, Peterborough), upon laboratory equipment and design; and by Mr. Oldham (Dulwich), upon the teaching of oxidation and reduction, in the latter paper attention being directed to the difficulty of giving a simple definition of these processes. The usual exhibition of books and apparatus will be held in connection with the meeting, and we understand that the number of entries for this is larger than it has ever been. A novel feature of the meeting this year is that it is being held in conjunction with the meeting of the Mathematical Association; the latter body will hold its meeting at Westminster School on the morning of January 12th. On the afternoon of that day there will be a joint meeting of both the associations to consider the report of the committee upon correlation of mathematical and science teaching, whilst, as already stated, the science masters meet on the following day. The members of each association are being invited to attend the meeting of the other, and we hope the experiment will prove a success and be repeated.

THE North of England Education Conference is to be held next year in Leeds, on January 6th to 8th. The following are to be the subjects of discussion at the conference, and several prominent educationists have promised either to read papers or take part in the discussions: the relation of elementary schools to technical schools (day and evening); education abroad and in England—a comparison; independent study and self-help in schools; co-operation between employers and education authorities; colour study in relation to general art and to trade; modern developments of applied art instruction; the teaching of geography and history, and their relation to one another; physical training in schools, with special reference to the new scheme of the Board of Education; modern ideas on general art instruction; the relation of the State to the training of teachers of domestic science, and their relation to the university; do we teach too many subjects in the primary schools? The Vice-Chancellor of the Leeds University, Sir Nathan Bodington, has consented to be the president of the conference, and it is proposed to hold all the meetings, both general and sectional, at the University.

THE annual meetings of the Incorporated Association of Assistant-masters in Secondary Schools will be held, as we announced last month, on January 5th to 7th, 1910, at the City of London School, Thames Embankment, London, E.C. The general meeting of members will be held on January 7th, and in the afternoon Prof. J. Adams, principal of the London Day Training College, will give an address. To this meeting all teachers in secondary schools, whether members of the association or not, are invited. Among the subjects for discussion by the council will be an important report on "The Conditions of Service of Secondary Teachers in Foreign Countries," prepared by a special committee which has been pursuing investigations into the subject during the past year.

THE annual general meeting of the Association of Teachers in Technical Institutions was held on November 6th in London, Mr. J. Wilson, the president of the association, occupying the chair. In the course of his address Mr. Wilson said this year the association has put forward a series of resolutions relating to the chief educational reforms which appear absolutely essential for the future progress of technical education. In these resolutions the association presses for: a raising of the leaving age to fifteen; special attention to be paid in the elementary school to the teaching of elementary science, practical arithmetic, and manual training; the co-ordination of the work of evening continuation schools with that of the technical schools; the provision of technical secondary schools, including trade schools, with a generous system of scholarships, including allowance for maintenance; and finally endorses the general principles of the recommendations in the Minority Report of the Poor Law Commissioners respecting the compulsory attendance of boys for technical instruction for not less than thirty hours per week. These resolutions have been forwarded to the Minister of Education, to the chief educationists in the country, to such bodies as the Parliamentary Committee of the Trades Union Congress, and to the Press. Mr. Wilson believes the resolutions will help to focus public attention upon these subjects, which appear as the vital practical educational issues of the day.

A DEPUTATION from the Rural Education Conference, which has recently been considering the best method of improving rural education, waited upon Mr. Runciman on November 3rd to place before him the conference resolutions. The conference, called by the County Councils Association, consisted of representatives of upwards of forty county councils in England and Wales, of the Central Chamber of Agriculture, and many associations interested in rural education. Mr. Henry Hobhouse, in introducing the deputation, said that the conference affirmed in its resolutions that manual training should be given in every elementary school throughout school life. There are difficulties in carrying this into effect in country districts, and the conference asked for the Board's co-operation in removing, or lessening, the difficulties. It is often impossible to find teachers qualified to give the proper instruction; the second difficulty is that of buildings and equipment; and, while in concentrated populations the present grants for special subjects may be adequate to cover the expenditure, they are quite insufficient in scattered populations. Mr. Runciman, in reply, said the object of the conference could be summed up by saying that it wished the education of children in the public elementary schools to be made more practical and less bookish, and the education given in the elementary schools to be adapted to the requirements of the districts in which the schools are situated. With those two objects the Board of Education has shown sympathy in many ways. The Board has attempted to encourage the experiments which the deputation advocated, but a disappointing feature of the movement is that the experiments have been so few. That is

the fault of the teachers and of the local authorities, not of the Board of Education. Then the difficulty with regard to the teachers is not of the Board's making. The Board does not bar good teachers from taking special subjects. The extent to which new work of an agricultural nature is being undertaken may be measured by the increase of garden classes, which were only 579 in 1904–5, and have gradually grown to 2,000. As was pointed out in our issue of last month, it has been arranged that in future a rural education conference representing all great agricultural interests in this country shall meet from time to time and give the benefit of its advice. By that means the Board of Education hopes, said Mr. Runciman, to keep in closer touch with the agricultural requirements of the children in elementary schools, and to ascertain from the agriculturist's themselves what new experiments should be undertaken.

TEACHERS of geography will be glad to learn that, by applying to Mr. H. Marriott, Victoria Station, Manchester, they can secure the use, free of charge, of a large selection of lantern-slides showing places of interest to which the Lancashire and Yorkshire Railway Company books passengers. The collection of slides includes views of popular pleasure resorts in Lancashire, the lovely scenery in the Boyne Valley, special places of interest in the north of Ireland, Scotland, the Isle of Man, and some of the romantic beauty spots in Yorkshire. A new set of slides dealing with Belgium and the Ardennes has just been added to the series of slides available for loan purposes. Connected readings for use with the slides can also be obtained from Mr. Marriott.

THE Agent-General for Tasmania directs our attention to the fact that lantern-slides illustrating Tasmania and its resources can again be loaned from his department during the coming winter months. The slides are made up in complete sets of about fifty-four, and with each set a pamphlet will be sent to assist the lecturer in describing the country to his audience. The only cost to the borrower will be the postage on returning the slides, viz., 11*d*. As some difficulty has been experienced in the past in allotting dates convenient to the applicant, as many dates as possible should be given in every application.

DURING the holidays last summer, the Société d'Échange international des enfants et des jeunes gens pour l'Étude des langues étrangères sent some 163 children abroad. While there were 112 exchanges between France and Germany, there were only forty-eight between France and England, fourteen of these only being girls. French mothers, it appears, do not like parting with their girls. The hesitation felt by English parents is being overcome gradually, and the system becomes more popular in this country year by year. It is interesting to note that the society has received already at its office (Boulevard Magenta, 36, Paris) a large number of requests from parents that an exchange may be effected for their children in 1910.

ACCORDING to a statement by the National Association for the Study and Prevention of Tuberculosis, if the percentage (1·61) of tuberculous children recently ascertained by an investigation in Stockholm, Sweden, were applied to the schools of the United States, there would be 273,700 children between the ages of eight and fifteen who are positively affected with tuberculosis. Yet there are only eleven open-air tuberculosis schools in the United States. Special schools for tuberculous children have been established in Providence, Boston, New York, Rochester, Washington, Hartford, Conn., Chicago, and Pittsburg. New York has three schools and Washington, D.C., two. The Board of Education of New York City is proposing to establish three more, and similar institutions are being planned in Detroit, Buffalo, Philadelphia, Cincinnati, and Newark, N.J. At the lowest estimate, however, even with all the schools now in operation and those proposed, accommodation will not be provided for 0·4 per cent. of the children who need this special treatment. Every city, the association insists, should provide at least one well-equipped school or special class-room of this sort for each 25,000 population. In cities like Providence, Boston, and New York, where outdoor schools have been conducted for two years, the results obtained from the treatment of children in special tuberculosis open-air schools seem to show the great advantage of this class of institutions. This, coupled with the experience of open-air schools in Germany and England, proves that children can be cured of tuberculosis and keep up with their school work without any danger to fellow-pupils.

ON October 21st the 500th meeting of the Natural History Club of Bootham School, York, was celebrated. The club has developed out of a society formed in 1834 by the first headmaster of the school, Mr. John Ford. The evening's programme included an inspection of work being done in the club in botany, ornithology, conchology, archæology, entomology, and microscopy. Past work was represented by the school exhibit, which was awarded a diploma of honour at the recent Franco-British Exhibition. The proceedings also included short lectures upon subjects of wide interest. The success of the evening was due largely to the tradition, which has been continuous for more than seventy years, that leisure time must be well filled by the boys at Bootham. Original observations, systematically recorded with illustrations, are encouraged, and in this way, as one of the masters of the school has said: "We get a mind alert to see all that is going on around it—bird, and flower, and beast, and changing sky—a mind of omnivorous interest, reflecting, like a mirror, all it sees. From older boys thinking as well as seeing is expected, and in their work evidence is often discovered of a persistent attempt to probe the unknown and to summon to their aid every method and every instrument which gives promise of assistance."

THE last annual report of the Superintendent-General for Education in Cape Colony is in many respects highly satisfactory. Dr. Muir is able to point out that in every particular but one there is marked evidence of progress. The facts in connection with school supply and school enrolment are, however, disappointing. The number of schools in operation on September 30th, 1908, had fallen by 141, of which 118 were schools for Europeans; while the enrolment had fallen by the total of 9,100, of whom 3,404 were white children. As regards administration, the work of the previous two years in introducing the School Board system has been completed successfully, there being at the close of the year under review 111 School Boards in existence, with control over 2,077 State-aided schools. What is still more encouraging is the change of attitude on the part of School Boards in reference to compulsory education. Formerly it was considered to be especially obnoxious to the people in rural districts; but during the year Board after Board passed urgent resolutions in favour of compulsion. In reference to the qualifications of teachers, the great improvement made in the previous year has been more than maintained; the rise during the year in the percentage of certificated teachers is from fifty-three to fifty-seven. This percentage, in view of the large number of aborigines' schools of lower grade, is quite striking, as, if these schools were left out of reckoning, the percentage would be noticeably increased.

In an article in our August issue Mr. Charles described the scholarship scheme of the London County Council, and explained that the provision of scholarships was such that no London child is debarred by poverty from obtaining the kind of education which will prepare him for the career for which his talents and character best fit him. The new issue of the "Scholarships and Training of Teachers Handbook," prepared for the London County Council under the direction of Mr. R. Blair, gives precise information as to all scholarships available and the conditions under which awards are made. The handbook, which runs to 157 pages, may be obtained from Messrs. P. S. King and Son, of Westminster, price one penny.

SCOTTISH.

The first annual meeting of the Secondary Education Association of Scotland was held in the Edinburgh University. As this was the first meeting of the now happily united rival associations of secondary-school teachers, the proceedings were followed by a large and keenly interested audience. Dr. Marshall, late rector of the Royal High School, was the central figure of the meeting. For close upon thirty years he has taken a foremost place in the councils of secondary-school associations, and it was peculiarly fitting that, at the beginning of a new era, he should be called upon to address his fellow-workers in the cause of education. Dr. Marshall's address was largely a review of Scottish education prior to the introduction of Government control. The most notable feature in the old system was the freedom and independence of the teacher, and to that Dr. Marshall ascribed all its great results. Under the deadening hand of State control, both elementary and secondary education had received a check, so far as the output of strong, self-reliant, courageous young people was concerned. Their knowledge was greater, but their character poorer. Dr. Marshall regards the universities as the last remaining stronghold of freedom in teaching. But events are marching so quickly at present that very soon we may see the universities governed by codes and examined by inspectors!

The report of Mr. George C. Pringle, organising secretary, showed that the association numbered more than 1,000 members. The position of the organ of the association, the *Secondary School Journal,* came up for consideration. While it was felt that its continuance in some form or other was vital to the welfare of the association, the financial statement showed that some alteration in the method of publication was necessary. After discussion, a committee was appointed to look into the question and report to the next annual meeting. Motions were passed asking that the names of the chief examiners for the leaving certificates should be published, and that the names of the schools taking part in the examinations should be withheld from the examiners.

The annual meeting of the Scottish Branch of the English Association was held this year in Glasgow University. Prof. Grierson, Aberdeen University, who presided, said that the chief object of the association was to afford opportunities for intercourse and mutual helpfulness to all interested in the study and teaching of English literature and language. Already the efforts of the association are beginning to bear fruit. In the school, English is now given a place of honour and importance on the time-table, while in the universities the present year seems to mark an epoch in the history of English studies. His own class in Aberdeen has never exceeded 120 in previous years, but when he entered the class-room this session he found 235 students in attendance. From all this it is clear that the place of English language and literature is firmly established as a most important subject of studies in what may be called the humanities.

Mr. A. M. Williams, principal of Glasgow Training College, in introducing a discussion on "The Place of Literature in Moral Education," said that in school practice there are two strongly marked types of educators. The first is all for indirect moral education as an outcome of school work and discipline; the other is for moralising every lesson. Whichever side we take, he hopes all will agree that, whether exclusively or inclusively, the purpose of the school is ethical, to give a cast to the pupil's character that will stand him in good stead when he goes out into the world. English literature is peculiarly fitted to give this moral instruction, but it will have to be done warily. If the teacher can speak like Ruskin in "Sesame and Lilies," or like Arnold in his chapel sermons at Rugby, he may with safety improve many lessons. Failing that, he should let the literature studied press home its own moral. We shall gain more in this way than by frontal attacks. An interesting discussion followed, in which lances were broken on both sides. On the whole the supporters of indirect moral instruction carried the day, though it was granted that there were many occasions when it would be almost criminal to neglect directing attention to specific moral principles. At the same time, it was felt that the effect would be all the greater for arising naturally out of the lesson in hand or out of some serious breach of moral discipline.

Captain H. G. Lyons, in his inaugural address as lecturer in geography in Glasgow University, said that Glasgow as the second city in the Empire, with its shipping trade in all seas and its sons inhabiting every region of the globe, is a specially favourable centre for the study of geographical principles. With the general improvement in the organisation of investigation and demonstration that marked the past few decades, geography has been put upon a more efficient basis, and is taking its place as a systematised branch of knowledge. It has for its province a region lying between astronomy and geology on one hand, and the biological and economic sciences on the other. The subject naturally divides itself into four main divisions—mathematical, physical, biological, and anthropological. The study of each of these groups is of great educational and practical value, and affords ample opportunities for research to the more advanced students.

With the help of the Carnegie Trust the Council of University College, Dundee, has been enabled to undertake this year a financial and educational reform of the utmost importance by the establishment of a fee fund for the professors of the college. The professors have hitherto been largely dependent for their salaries upon the class fees of the students. This arrangement was an unsatisfactory one, the resulting emoluments being unequal and in some cases insufficient. The system under which each professor has a direct financial interest in the number of students in his class is radically unsound, and has long been abandoned at the other university centres. In future Dundee professors will receive an annual salary of £600, and all class fees will go into a common fund.

IRISH.

The introduction of inspection into intermediate schools has raised two important questions, neither of which has yet been settled finally. The first concerns the inspection of boarding schools, and is whether, in their case, inspection is to include the whole premises or to be limited to

the class-rooms. This question was discussed between a committee of the Commissioners and the representatives of the schools in the spring, and the latter thought it had been determined in the narrower sense; but the Commissioners clearly did not share this opinion, and after considerable discussion they have issued a circular stating (i) that the inspection of dormitories, cubicles, and residential premises be at the option of the headmaster; and (ii) that in the annual report of the Board a list be published of such boarding schools as have invited internal inspection and obtain satisfactory reports from the inspectors. It is not likely that, at least in the immediate future, Roman Catholic schools will invite such internal inspection after the resolutions of the Catholic headmasters, which has been supported by a unanimous resolution of the Roman Catholic bishops expressing their entire concurrence with them.

THE other question relates to the request of the Board for information concerning the salaries, qualifications, &c., of the staffs of intermediate schools. On this, too, there is much heart-searching, and the Board has invited the representatives of the schools to confer on it with the Assistant Commissioners. Clearly such information, if given, should be confidential, and it is not easy to see why it should not be placed at the disposal of the Commissioners if their object is to be able to give proofs to the Government that more money is required for secondary education in Ireland.

THE financial question is becoming more and more prominent in intermediate education, and at last is beginning to force itself upon the Commissioners themselves. In issuing the full prize-list of the last examinations, they sent out a circular stating that the Board had determined this year not to reduce the number of prizes, but that in future years the number was likely to be less, and the preparatory grade prize fund, which has been halved this year, would probably be altogether abolished in 1911. This was due to the continued decrease in the funds at the disposal of the Board. An agitation in favour of a revision of the marks in English, Irish, and French was carried on with great energy, and questions were asked in Parliament, but no impression was made upon the Board. The Board did, indeed, order some of the papers to be re-examined, but the verdict was that the marking was correct, and no revision took place. The exhibitions, therefore, remained as stated last month.

THE summary of prizes actually awarded is as follows, the total value being £1,514—boys £1,260, girls £254:

Boys.

Grade		Classics	Modern Lit. I. (with Irish)	Modern Lit. II. (without Irish)	Math.	Science	Total
Senior,	£3	1	1	2	3	16	23
	£2	6	—	1	1	6	14
	£1	—	1	2	1	3	7
Total		7	2	5	5	25	44
Middle,	£3	6	22	6	33	38	105
	£2	3	4	5	14	13	39
	£1	1	4	1	7	8	21
Total		10	30	12	54	59	165
Junior,	£3	24	67	8	27	46	172
	£2	9	25	3	15	21	73
	£1	6	8	4	2	6	26
Total		39	100	15	44	73	271
Total in all Grades		56	132	32	103	157	480

Girls.

Grade		Classics	Modern Lit. I. (with Irish)	Modern Lit. II. (without Irish)	Math.	Science	Total
Senior,	£3	—	2	2	—	—	4
	£2	—	1	5	—	1	7
	£1	—	—	1	—	—	1
Total		—	3	8	—	1	12
Middle,	£3	—	2	1	1	—	4
	£2	—	5	1	—	2	8
	£1	—	2	—	—	—	2
Total		—	9	2	1	2	14
Junior,	£3	—	18	23	1	2	44
	£2	—	16	8	—	1	25
	£1	—	3	1	1	1	6
Total		—	37	32	2	4	75
Total in all Grades		—	49	42	3	7	101

THE autumn air has been filled with the coming and going of universities and all the attendant clash and din of conflicting forces. The Royal University has passed away. The Queen's University, Belfast, has started with a dispute on undenominationalism, but is in working order. The National University is still in its initial difficulties, and can scarcely be said, as yet, to be in full swing. Even Trinity College has been stirred, and has affiliated a new offspring in Magee College, Londonderry—1909 will indeed be a landmark in higher education in Ireland.

THE Royal University expired on October 31st. The last degree day, on October 29th, was marked by extraordinary rowdyism. The occasion was taken to confer honorary degrees on those members of the Senate who had not previously received them. The number of ordinary degrees conferred this year was 350, as compared with 341 last year, and the number of students entering for examination 4,390 this year and 4,136 last year. Arrangements have been made for those students of the Royal who have not finished their course to take the rest of their examinations under one or other of the two new universities.

IN Belfast a commission which was held to decide whether the professorship of scholastic philosophy was not a violation of the statutes determined in favour of the professorship, and consequently in favour of the decision of the Senate; but much ill-feeling has been raised, and many of those who have contributed to the fund of £70,000 in support of the University feel that they contributed under a misapprehension. It is a pity that this dispute has marred the opening of the University, but it has certainly strengthened the feeling in Londonderry and the north in approval of the affiliation of Magee College with Trinity.

THE main college of the National University, viz., University College, Dublin, is still without a permanent home. For the present it is using the buildings of the previous University College (which had been lent to the Jesuits by the Roman Catholic hierarchy) and the buildings of the Royal University. It can hardly make a fair beginning this year. The professors were only appointed late in October, and about the same time there appeared announcements as to a scheme of scholarships and other prizes for the session 1909–10. In the meantime, the conditions of matriculation remain unsettled, and it is not yet definitely known whether Irish will be compulsory or not.

WELSH.

THE opening of a new boarding-house for the Dolgelly County School last month afforded an opportunity for the statement of views as to the present position of education in Wales. Sir Osmond Williams was of opinion that, in

spite of the vast amount of good done by the county intermediate schools, they have not done so much for the needs of Welsh boys as they might have done. For instance, there is in the Civil Service of this country a splendid field for Welsh boys. There should be classes for boys preparing for the Civil Service. Then for those boys who have no intention of entering college, schools should train them for places in offices and quarries, &c., and do it systematically. The fault in English schools is that "they attend too much to details, to spelling, instead of to mind, style, and marshalling the mind." Now, well as all this sounds, there are educationists, on the other hand, who consider that secondary schools should be concerned with a liberal education, and that a boy's future occupation is accidental, not an essential aim; Herbart says this is as little the concern as the colour of his coat. Which is right? Does Sir Osmond Williams regard a secondary school as a technical institute for clerks and quarry-workers?

ON the other hand—on the same occasion, curiously enough—it was a professor of agriculture, Prof. Bryner Jones, who declared himself not altogether in sympathy with utilitarian instruction. The knowledge of chemistry is valuable in teaching method, accurate observation, sequence of thought, even if a boy is not to become a chemist; and, as a matter of fact, a proper knowledge of English is more valuable, even from a utilitarian point of view, than technical instruction. Lack of knowledge of English hampers Welsh students even in college. He would like a garden to be attached to every school, not to make the pupils into gardeners, but so as to quicken their interest in rural things. He would suggest the landed proprietors of Merioneth would do more good by subscribing to provide scholarships to aid intending farmers to go to college than by subscribing to cattle shows.

IN the twelfth annual report to the Local Education Authorities (1909) the Central Welsh Board issue statistics and include the examiners' reports on the school examinations as submitted to the Board of Education. The number of pupils in the 95 Welsh intermediate schools for 1908 is 6,235 boys and 6,727 girls; total, 12,962 pupils. The total number for 1907 was 12,499, and for 1906 11,577. The total number of teachers on the permanent school staffs in 1908 was 692. The staffing, therefore, is one teacher to rather less than 17·3 pupils. Of the 692 teachers, 501 hold a degree or equivalent certificate.

THE 95 intermediate schools are under the charge of 74 headmasters and 21 headmistresses. There are 296 assistant-masters and 301 assistant-mistresses. There are in the schools 133 trained certificated teachers, 14 certificated teachers, 54 teachers who hold the Cambridge University Diploma, 3 teachers who hold the London University Diploma, and 53 teachers who hold teachers' diplomas or certificates from various other sources. The average salary paid to assistant-masters is £140 5*s.* 11*d.*, and to assistant-mistresses £113 12*s.* 2*d.* The average cost of examinations (written, oral, and practical) per school is £37 11*s.* The average cost of inspection per school is £20 6*s.* 7*d.*, and the average cost of central administration per school is £20 16*s.* 10*d.* The total expenditure of the Central Welsh Board (including examination, inspection, and administration) per school is £78 6*s.* 1*d.*

THE Welsh National Library at Aberystwyth reports considerable progress. The librarian (Mr. Bellinger) has received into his care two consignments of records from the Public Records Office in London. These are documents relating to proceedings before the Courts at Chester and in the Courts of Great Sessions in Wales. The most important series consist of the Protonotary's Papers, 1660–1830, for the twelve counties of Wales and the county of Chester. These are files of miscellaneous letters and papers connected with the current business of the Protonotary, in whose office were filed all proceedings in civil actions in the Courts of Great Sessions in Wales. The quantity of documents is considerable, the two consignments weighing about four tons. Special shelving for the storing and preservation of these records has been provided.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Hugo, Les Feuilles d'Automne. Edited by H. C. Norman. 159 pp. (Dent.) 1*s.* 4*d.* net.—This is a well-printed edition of Hugo's third great volume of poems. The introduction, notes, and even the title-page are in French. The introduction is composed of a very short biography of the poet and an epitome of the historical events from 1789 to the date of the publication of the poem, followed by some extracts from French and English critics on Hugo and his work. Mr. Norman's notes are brief and to the point. He does not hesitate to translate difficult French words into English; in fact, we wish he had done so more often. We question the value of "carène, partie inférieure d'une navire" (p. 140): to say "keel" outright would be much more likely to be of service to the pupil. Again, "houle, vague" (p. 138) is a weak explanation, and must be supplemented by the teacher. The notes are commendably free from misprints. We have noticed prévot (p. 134), rebels (p. 154), aiguiller (p. 147). Has not the grill-theory of the Escorial been exploded?

Épisodes en action. French Scenes for the Class-room, with a Phonetic Transcript. By J. Stuart Walters. 125 pp. (Dent.) 1*s.* 4*d.* net.—This book contains a set of thirty-three scenes for pupils to act in the class-room in order to encourage them to talk French. They are along the lines already made familiar to us by Miss Partington's little books; but this one would suit older students. Half the book is in ordinary type, the other half in phonetic transcript. The printing and get-up are what we expect to find in the Dent books. On p. 1 we should prefer *grosse* for *grande*, and on p. 15 *à genoux* for *à genou*. But with all these French conversation books there always remains an uneasy feeling at the back of one's mind that, although not incorrect, a French man or boy would have said the thing differently.

Grundzüge der deutschen Literaturgeschichte. By Dr. Gottlob Egelhaaf. 204 pp. (Lockwood.) 2*s.* 6*d.* net.—This well-known little book now appears in its twentieth edition. It is undoubtedly one of the best short editions of German literary history. The author has avoided giving an account of all the works which are famous in German literature, and has instead confined himself to the more important authors and their influence. This is the only proper course to pursue in a book of two hundred pages. Only when dealing with the very earliest and latest periods has he departed from his usual plan, and these periods are dealt with more fully. This is, in our opinion, a mistake, especially so far as modern literature is concerned. We here get what is little more than a mere catalogue of names. Particularly good is Dr. Egelhaaf when dealing with the Romantic school. We have never seen this period better dealt with in such short limits. The relationship

of Goethe and Schiller to the Romantic school is explained clearly and carefully in the chapters devoted to these two great men. The value of the book would be enhanced by a bibliography of the chief critical works dealing with the six periods into which the author divides his work.

Classics.

Lucian's Dialogues Prepared for Schools. By W. H. D. Rouse. 2 vols. Text viii+100 pp.; notes 87 pp. (Clarendon Press.) Each 2*s.*—The first volume contains fifty of Lucian's dialogues prepared for school use by some necessary omissions and changes in the direction of simplification in moods and syntax. The printing, as is to be expected from the publishers, is excellent. The characteristic features of this edition lie in the second volume, containing the notes, which are all in Greek, and in the preface and hints to the master in the first volume. The notes are in a separate book, as it is not intended that they shall be put into the hands of the pupil until he is reading the dialogues for a second time. Dr. Rouse is an experimenter; the results of his experiments are always worth consideration, and contain useful hints even for those who do not see their way to adopting his methods in their entirety. Therefore every teacher should examine this edition. In this case the method suggested is to give the boys the Greek text, to read it aloud, to get the boys to ask in Greek for an explanation of what they do not understand, to explain the difficulties in Greek, and then the boys, by way of homework, are to write out the translation in English. Each dialogue will provide a separate lesson. The difficulty of this method seems to us to lie in the smallness of a boy's vocabulary during his second half-year of Greek, when he is supposed to read this book, Lucian's vocabulary not being of the easiest. But *experientia docet,* and a trial of this method would prove a welcome variation for many a weary schoolboy. There is an index to the notes; an index to the dialogues would also have been useful.

The Acharnians of Aristophanes. With Introduction, Critical Notes, and Commentary by W. Rennie. viii+280 pp. (Arnold.) 6*s.* net.—We have read this book with satisfaction. It gives a careful exposition of every difficulty that the play presents: if any are omitted we have not found them, and we are confident that none have been shirked. The most we can say is that now and then the editor seems a little uncertain in his mind, or that his brevity—a welcome virtue—has led him into some little obscurity. We are not sure what he thinks of the scholiast's note on 610; and we have noted one or two other places. Mr. Rennie gives very good equivalents for comic words and names: ἀπουδαρχίδαι, "place-hunters, tapers and tadpoles," Νεφελοκοκκυγία, "Gowkland," Διομειαλάζονας, "Captain Bobadils from Gascony," are examples; but we do not like "these here drachmae" for *αὐταί,* which has no hint of vulgarity in it (130). For ἵττω Δεὺ (911) we may suggest St. Pathrick or even Be jabers! The notes on the setting of the play (as on 134, 593) are admirable; and so in most cases is the statement of pros and cons in a difficult passage. Mr. Rennie has a keen scent for style, and he is especially good at seeing a "paratragic" hit. We are also particularly pleased to see that Mr. Rennie recognises nonsense when he sees it; the best example is the note on 920, but there is another where he makes a defence for the MS. reading, a well-known difficulty, by allowing the comedian to talk nonsense with a grave face (541). Careful distinctions such as that between πωλ ἴν and ἀποδόσθαι (625) are common; and there is a pleasant literary flavour in the whole work, with hints and allusions to our own literature (see on 920, for instance). We are glad to be able to recommend this work to serious students; it has too much for the schoolboy.

Thucydides' Histories. Book IV. Edited by T. R. Mills. With a general introduction by H. Stuart Jones. xxvi and 160 pp.; text not paged. (Clarendon Press.) 3*s.* 6*d.* (Notes separately, 2*s.*)—We are glad to direct attention to the introduction to this book: a carefully reasoned criticism of the author's worth as a historian. Mr. Jones vindicates him from charges of carelessness, not to say dishonesty, and even snatches victory from the jaws of defeat. In comparing, for instance, Thucydides with the Constitution of Athens in the account of the Four Hundred, so far from being abashed at the array of documents which the Constitution gives, he holds that these represent "an *ex parte* version officially inculcated by the oligarchs," while Thucydides gives "a living picture of events, stript of the disguises with which they were cloaked by the party in power." He passes lightly over the historian's mistakes in geography, nor is the difficulty of Sphakteria cleared up by the editor in his appendix. When we turn to the notes we are less satisfied. There are too many helps given to the lazy pupil, who is told that ἐν χερσί means "hard to tread"; ἐκ τοῦ τοιούτου, "in these circumstances"; τῶν ἑτέρων, "the other side"; and many such trifles; while the longer renderings are very clumsy. Take one or two: "for it was of course with the intention of securing our respective interests that we originally commenced hostilities"; "he then made preparations for the attack, as for an object worthy of greater zeal on the part of the Athenians." ἀδικεῖσθαι means that he is in the right, the other in the wrong, that he is the injured person, not that he "*had been* wronged" (p. 99); if this is a possible paraphrase, it is not, as the note says, the meaning of ἐδικεῖσθαι. οὐ τυχόντες does not mean *if* (p. 31). Our old friend the adscript reappears (p. 57): we thought he had been killed in Egypt.

English.

(1) *Best Letters of C. Lamb.* Edited by E. G. Johnson. 336 pp. *Best Letters of Lady Mary Wortley Montagu.* Edited by O. Thanet. 302 pp. *Best Letters of W. Cowper.* Edited by A. D. McMahan. 301 pp. *Best Letters of P. B. Shelley.* Edited by S. C. Hughson. 328 pp. (Heinemann.) 1*s.* 6*d.* each.

(2) *Stories from Thucydides.* Retold by H. L. Havell. 252 pp. (Harrap.) 1*s.* 6*d.*

(3) *Everyman's Library: Lord Macaulay's Speeches.* With Introduction. 464 pp. *William Carey, Shoemaker and Missionary.* By George Smith. 326 pp. *The Bayard of India. A Life of General Sir James Outram.* By Captain Lionel J. Trotter. 240 pp. (Dent.) 1*s.* each.

(4) *The Elizabethan Shakespeare: The Winter's Tale from the First Folio.* With Introduction and Notes by W. H. Hudson. 220 pp. (Harrap.) 1*s.* 6*d.*

(5) *Stories from Germany.* Edited by C. L. Thomson. 187 pp. (Marshall.) 1*s.*

(6) *Arnold's English Texts: Idylls of the King; Bible in Spain; The Cloister and the Hearth; The Naturalist on the River Amazon; Hiawatha; Natural History of Selborne.* (London: Arnold.) 6*d.* each.

(7) *Poe: The Gold Bug and other Tales.* Blackie's English Texts. Edited by Dr. Rouse. 118 pp. 6*d.*

(8) *Oxford Plain Texts: Milton's Paradise Lost,* Book I., Book II.; *Shelley's Adonais; Byron's Prisoner of Chillon.* (Clarendon Press.) 4*d.* each. Also *The Faerie Queene,* Book I. 1*s.*

(9) *The Sterling Readers.* Primer, 2*d.*; Preparatory, 4*d.*; Elementary, 6*d.*; Junior, 8*d.*; Intermediate, 10*d.*; and Senior, 1*s.* (Browne and Nolan.)

(10) *The New American Citizen: a Reader for Foreigners.* By F. S. Mintz. 206 pp. (New York: The Macmillan Company.) 2*s.* 6*d.*

(11) *A Book of Nature Myths.* By F. Holbrook. 160 pp. (Harrap.) 9*d.*

(12) *Tales of Early England.* Retold by E. M. Wilmot-Buxton. 160 pp. (Harrap.) 9*d.*

(13) *Gisli the Outlaw.* By Sir G. W. Darent. 160 pp. (Harrap.) 9*d.* *Old Celtic Tales.* By E. M. Wilmot-Buxton. 128 pp. (Harrap.) 6*d.*

(14) *Graded Readings.* Third Grade: *Purring when You're Pleased.* 64 pp. *Lohengrin.* By Norley Chester. 80 pp. 4*d.* each. Second Grade Readings: *The Story of Havelock; The King of the Golden River; Picture Children,* Parts I. and II. (Nelson.) 4*d.* each.

An exceptionally interesting bundle is here. Laurel-crowned Letters (1), if fanciful in title, supply a want. Charles Lamb, Lady Mary, William Cowper, Madame de Sévigné, and, above all, Shelley, contain fine letter-reading. Each volume has a good introduction, and Lady Mary Montagu is addressed in a clever introductory letter by the editor, O. Thanet. It is the custom to praise Cowper; but surely Shelley and Lamb wrote letters as beautiful as, and more intellectual than, his. This series was badly needed, and we hope it will go on. Mr. H. L. Havell has done something quite new in "Stories from Thucydides" (2). The book is admirably printed, and the text is just what was wanted: the illustrations are unworthy of the subject; but that surely could be altered. The same publishers have done the story of Roland in the same way: the text and printing are admirable, but, with few exceptions, the illustrations fail. Possibly the price prevents the wealth of illustration from being drawn upon. It is unfair to carp at such books: but a good illustration often lets one into the heart of things. The last additions to Everyman's Library are Macaulay's speeches and the lives of William Carey the missionary and of General Sir James Outram. Three more dissimilar books one could scarcely expect; but this only shows the catholicity of the 500 volumes now published. The Elizabethan Shakespeare Reprints, often referred to in this magazine, have now reached "The Winter's Tale" (4). Five plays have been published: it is a delight to handle the books. Miss C. L. Thomson has broken new ground in "Stories from Germany" (5). The stories, which mainly come from the Wagner cycle, are very well told in clean English, and the book forms one of the Romance Readers. The illustrations are most striking. The English Texts of Mr. E. Arnold are cheap and well printed, and embrace welcome additions (6); and Blackie's English Texts have added some of Poe's Tales (7). And another series, the Plain Texts of Mr. Froude (8), continue to come out in their neat, unassuming covers. The Sterling Readers (9) are new to us: they are mostly devoted to animal stories and are likely to be very well received. "The New American Citizen" (10) is a remarkable book. The idea is admirable, but Miss Mintz must have a strange idea of the matter suitable for adult foreign pupils in evening schools; perhaps by foreign is meant non-English-speaking. The printing is admirable, but the illustrations (as in so many American books) are too small. Miss F. Holbrook's work has been noticed before: "A Book of Nature Myths" (11) taken from the masses of folk-lore which still await editing for schools. The same publishers send "Tales of Early England" (12)—as legendary as the nature myths, but very fine and stimulating. "Old Celtic Tales" (which, by the way, was almost the name of the o.p. collection of Joyce—would that someone would reprint it) and "Gisli the Outlaw" (13) are also welcome. All these books are on the right lines, and the imagination of the poorer children must be brought out into the open by such volumes; but—we have asked the question before—*do the primary schools get these books?* It would be an admirable thing if an energetic teacher would collect the names of the reading books in actual use in fifty representative primary schools. We fear there would be revelations of ancient readers and parsimony and dull material for English lessons. Messrs. Nelson (14) send an admirable set of Graded Readings. The greatest pains have been taken with type and illustration. We suppose we shall have to wait a long time before we have a censorship of school books: we should welcome a diminution in the output and an improvement in the quality; but those noticed in this brief review would pass any censor triumphantly.

Writing and Speaking: a Text-book of Rhetoric. By C. S. Baldwin. 443 pp. (Longmans.) 5*s.*—We take Prof. Baldwin's "Writing and Speaking," a handsome, well-printed book of four hundred pages, as a peg on which to hang a protest. And, for fear of being misunderstood, we may say at once that the book is excellent. It insists on clearness, interest, and the study of description. It is breezy and suggestive; and here comes the point, *it is crammed with errors which no English school would tolerate,* and with phrases which no English school could understand. A few examples taken from the first twenty pages must suffice: "usage permits, Decatur street"; "Mayor McClellan"; "2/3/08 should be Feb. 3, 1908"; "each clause is indented like a paragraph"; "a dead lift"; "cap the climax"; "Let me accept very appreciatively your invitation to dine with Mr. Baker and you." These may seem trifles: but the book is loaded with them. References to English books on English and to English literature are frequent, and the book is evidently intended for us as well as for Americans. But no sort of trouble has been taken to make any chapter acceptable to English eyes. O. W. Holmes, Frank Stockton, W. D. Howell, James Lane Allen, G. W. Cable, and a dozen authors one could name would never have been guilty of producing so careless a volume—at any rate if there had been any expectation of a sale in England. This habit of keeping books "American" and expecting them to be used here is steadily on the increase. Any educated Englishman could have read the book in proof and have added English equivalents or have relegated peculiarities to footnotes. The error is avoidable; and it is a pity that the usefulness of otherwise good books should be marred by the perpetuation of it.

History.

The Dawn of Mediaeval Europe, 476–918. By J. H. B. Masterman. xix+253 pp. *The Central Period of the Middle Age,* 918–1273. By B. A. Lees. xix+280 pp. *Europe in Renaissance and Reformation,* 1453–1659. By M. A. Hollings. xxv+275 pp. (Methuen.) 2*s.* 6*d.* each.—These are the last three volumes of a series—"Six Ages of European History"—which we have already noticed. They are all well written and will be useful as an introduction to the study of European history. Each is provided with maps, bibliographies, and indexes. Prof. Masterman is comparatively uninteresting until he reaches the reign of Charles the Great; but that is probably owing largely to the nature of his subject, and he makes now and then suggestive allusions to modern history. The

chief points for notice in Miss Lees' volume are her excellent treatment of the story of the First Crusade and of the famous scene at Canossa. She points out that the legend of Barbarossa's expected return was first told of his grandson, Frederick II. Miss Hollings tells the story of each country separately, but corrects the confusion arising thence by the insertion of a chronological table.

Classified Catalogue of Books on English History. By A. N. Brayshaw. 54 pp. (Bootham School, York.)—This useful catalogue was first published in 1903, when a short notice of it appeared in THE SCHOOL WORLD. It has just been revised and brought up to date, and the process has nearly doubled it in size. Although it is merely the catalogue of a school library—the John Bright Library of the Bootham School at York—yet so well furnished is the library in works on history, and so carefully have they been studied and classified by Mr. Brayshaw, that the catalogue is of great value to all students of English history. In the first section we have a list of the best authorities on the history of the British Isles as a whole. Then follow sections dealing in order with the best books on Celtic and Roman Britain, the Anglo-Saxon period, the Norman and Angevin period, and so on to the present day. One defect the catalogue has from the point of view of the general reader—it lacks an alphabetical index. This, we learn, is provided for the fortunate users of the John Bright Library by a card catalogue. May we suggest that Mr. Brayshow should add this index, and then place his catalogue upon the market? It would be a great boon to many teachers.

Anna van Schurman. By Una Birch. 204 pp. (Longmans.) 6*s.* 6*d.* net.—This is a temperate, well-written life of one who was surely one of the most gifted and remarkable women of her, or in fact of any, time. Considering the part she played in the religious life of Holland in the seventeenth century and the correspondence she carried on with learned men throughout Europe, the "Star of Utrecht," as her fellow-townspeople called her, is now singularly little known. She is not even mentioned in the "Encyclopædia Britannica." And yet her home in Utrecht was for many years the objective of the most distinguished scholars in Europe, whenever they visited Holland. Even Queen Christina of Sweden did not think it beneath her dignity to visit the peace-loving, shy maiden in her modest house in the Cathedral Square. The biographer has given us a plain, unbiassed account of Anna's life from her early days in Cologne to her final resting-place in Friesland. There are short discussions on the religion and philosophy of the time as exemplified by the Calvinists, Jansenists, Descartes, and Labadie, all of which help to make us understand Anna's "Gedankenentwicklung." The way she and the Labadists were so stoutly defended by Princess Elizabeth of Bohemia against the bigots of North Germany is one of the best chapters in a book that is well worth reading.

A Guide to the Study of English History. Part III., 1688–1901. By L. J. McNair. viii+85 pp. (Alston Rivers.) 1*s.* net.—"The intention of this little book is to aid the student of English history by suggesting useful topics for study, by stimulating inquiry into important points connected with those topics, and by indicating where information can be obtained." That intention is carried out by giving a series of questions on forty subjects belonging to the two centuries covered, a set of references to standard and other books, and brief memoranda. The method adopted is good, and the result will be useful to teacher and pupils.

Modern Times. 319 pp. (McDougall.) 1*s.* 6*d.*—The story of "The Empire and the World since 1789" cannot, of course, be told adequately in some three hundred pages, some of them either wholly or partly filled with pictures, and further illustrated with poetical extracts; but it is certainly remarkable to find how much is clearly, if slightly, set forth in this little book. It contains a summary of the chapters, a chronological chart, and an index.

School History of Essex. By W. H. Weston. 238 pp. (Clarendon Press.) 1*s.* 6*d.* net.—A good example of the many small county histories which we have noticed from time to time. The history of the country as reflected in the county stretches from "geological" times—if we may use this phrase—until the present century. There are some sixty pictorial illustrations.

Geography.

Highways and Byways in Middlesex. By Walter Jerrold, with illustrations by Hugh Thomson. xviii+400 pp. (Macmillan.) 6*s.*—By many of us the county of Middlesex is, it is to be feared, merely looked upon as the green borderland of London—confused, indeed, with the great metropolis itself; but, after reading the latest addition to the Highways and Byways Series, this homeliest of the home counties—as Mr. Jerrold calls it—becomes as marked in its individuality as Devon or Cornwall. The book is full of interest, literary and historical; it begins with the description of Hampton Court and ends with an account of a plot which romantically transforms even that most prosaic of places, Turnham Green. In these "Highways and Byways of Middlesex" the greatest persons in history, literature, and art are met with. If association with the world of letters is desired, there are Twickenham, with its memories of Pope, Tennyson, and Dickens; Winchmore Hill, the residence of Hood; Laleham and its connection with Arnold of Rugby and his famous son; and Harrow-on-the-Hill, boasting of such scholars as Byron, Sheridan, and Peel. The Battle of Barnet and the story of the riotous Middlesex Parliamentary candidate, Wilkes, form two of the many historical events for which the county is famous. Mr. Hugh Thomson's delicate sketches are, as usual, an added attraction to the book and greatly increase its value. It may be recommended as a prize or as a volume for the school library.

The Elementary Geography. Vol. ii. *In and About Our Islands.* By F. D. Herbertson. 112 pp. (Clarendon Press.) 1*s.*—The characteristics of the series to which this little book belongs have been enumerated already (p. 317). It is only necessary to say that Mrs. Herbertson maintains the high standard reached in the two previous volumes. Map-reading is given great prominence, and an abundance of exercises ensures the active participation of the children in the lessons. Teachers requiring a simple introduction to the geography of the British Islands should examine this book.

Map of Argentina. (The Royal Mail Steam Packet Co.)—Teachers of geography would do well to apply to the head office of the Royal Mail Steam Packet Co., 18, Moorgate Street, London, E.C., for a gratis copy of this map. New countries are dependent upon the opening of railway lines for their growth, and this map provides an excellent illustration of the efforts of a new country to make railway lines. The lines are shown in colours. In addition there are inset maps of the environs of Buenos Aires, Bahia Blanca, and Mendoza. The railways of Chile and Uruguay are also shown in black. The whole forms a useful supplement to the orographical map of South America.

A Weather Indicator. By W. Ballance. (Philip.) 41 in. × 31 in. Sheet, 2*s.* 6*d.*; cloth, with rollers, 3*s.* 6*d.*—This sheet is compact with information as to the weather in the form of rules. As a supplement to the daily study of either meteorological instruments or of the daily weather report, the information will prove exceedingly useful in schools. The facts are stated concisely and well arranged for handy reference. There is a classification of cloud forms and an explanation of the deductions which may be drawn from such forms. A glossary of terms is included. Teachers of observational nature-study, as well as teachers of geography, will find much here to stimulate the powers of the pupils towards careful observation.

Mathematics.

Plane Trigonometry. By H. S. Carslaw. xviii+293+xi pp. (Macmillan.) 4*s.* 6*d.*—This book is divided into two parts, the first including the elements of trigonometry up to the solution of triangles, while the second forms an introduction to higher trigonometry. The author assumes that the student brings to the study of the subject some knowledge of logarithms, and from the very beginning calculations involving their use are introduced, a set of four-figure tables being printed at the end of the book. Considerable prominence is given to graphical constructions as affording a check on the results obtained by calculation. The examples in the first part are of all grades of difficulty, ranging from quite straightforward exercises to scholarship puzzles. A good feature is that they are not too numerous. In the chapters dealing with the more advanced part of the subject, the author seems to have been somewhat hampered by the conflict between his desire to present absolutely rigorous proofs of the theorems and his knowledge that such proofs are as a rule too difficult for beginners. The plan he has adopted is to point out the weak points in the proofs, and refer to other works, such as Hobson's treatise, for a more complete discussion. He has, moreover, deemed it undesirable to make use of infinite series involving imaginaries; hence much that is usually found in text-books is here omitted. It is needless to say that the presentation is perfectly satisfactory so far as it goes, and it is well that students should be led to perceive the existence of difficulties, even though no immediate solution is offered; still, we think not much harm would have been done had the author gone a little further in his sacrifice of rigour to utility. Apart from this, however, teachers will find this in every way an admirable text-book.

Elements of the Differential and Integral Calculus. By A. E. H. Love. xiii+207 pp. (Cambridge University Press.) 5*s.*—This book is an outcome of the experience gained in teaching the elements of the calculus to classes consisting chiefly of students of chemistry and engineering. Prof. Love considers that persons possessing a much more limited mathematical equipment than has hitherto been deemed necessary can obtain an adequate knowledge of the fundamental principles of the subject; indeed, he says that this knowledge should be possessed by every well-educated person. Whether this be so or not, there could be no more lucid and attractive exposition of the elements than that contained in the present volume. Simple cases of the differentiation and integration of algebraic functions and applications of the same to geometrical and mechanical problems occupy the earlier part of the book; the more difficult theory relating to the exponential, logarithmic, and trigonometric functions being reserved for the later chapters. An appendix contains a series of valuable notes on theorems connected with limits, which, although of fundamental importance, were considered by the author to be somewhat too difficult to find a place in the text. This book should find a place in the library of every teacher, and may be unreservedly commended to all who wish to gain some insight into the principles of the most powerful analytical weapon which the intellect has devised.

A First Course in Analytical Geometry, Plane and Solid. By C. N. Schmall. vii+318 pp. (Blackie.) 6*s.* net.—In writing an introductory text-book on a subject which has been cultivated with so much assiduity, it is difficult to introduce novelties either in substance or in mode of exposition; and although the author directs attention to his methods of treating certain matters, there is little to be found which is not in other books of a similar character. In some respects we think there is room for improvement. In dealing with the ellipse, the value of the transformation $x = a\cos\theta$, $y = b\sin\theta$, does not lie so much in the interpretation of θ as a certain angle, as in the co-ordinates being expressed in terms of a single variable. The desire to obtain a similar geometrical interpretation in the case of the hyperbola leads the author to give the transformation $x = a\sec\theta$, $y = b\tan\theta$. This is much inferior to $x = a\cosh u$, $y = b\sinh u$, because the trigonometric transformation fails to bring out the parallelism between the equations of the two curves and their related lines. Further, no reference is made to the corresponding transformations for the parabola. There is, however, much in the book worthy of commendation. The type is clear, the diagrams excellent, and there are many well-selected examples. The only systems of conics considered are confocals, but there is a chapter devoted to some of the more important higher plane curves. The last four chapters deal with the elements of solid geometry.

Science and Technology.

The Stars from Year to Year, with Charts for every Month. 1*s.*

The Star Almanac for 1910. Printed on a sheet, 30½ in. × 22½ in., with Star Charts of the Four Seasons, &c. 3*d.*

The Star Calendar for 1910. Designed in the form of a Star, containing the Constellations of the Northern Hemisphere on one Chart, with dates, mottoes, &c. 1*s.* All by H. P. Hawkins. (King, Sell and Olding, Ltd.)

These three publications should serve to direct attention to the beauties and changing aspects of the firmament of stars. The first is a handy book containing notes on some celestial objects, as well as very clear charts of the sky month by month. The Star Almanac should find a place on the walls of every school in which observations of nature are encouraged; and the Star Calendar provides a compact and useful guide to the constellations at one view. Each of the publications has only to be seen to be appreciated. No better or cheaper means of becoming acquainted with the topography of the heavens is available, and we trust that the demand for the book, almanac, and calendar will be so great as their real merits deserve.

Modern Astronomy. By Prof. H. H. Turner. xvi+286 pp. (Constable.) 2*s.* 6*d.* net.—Prof. Turner's stimulating statement of astronomical progress was first published at the price of six shillings in 1901, and is now issued in a cheap edition. It describes the instruments used by astronomers in modern observatories and the problems they have served to advance or solve. The book is one which can be read with pleasure and profit by all who are interested in the progress of the noblest of the sciences. In some matters it is, of course, behind the times; as, for instance, in the remark "when the new

Yerkes Observatory is completed, which is now nearly the case," and in the account of Prof. Hale's work with the spectroheliograph. Perhaps Prof. Turner will supplement the present volume with another upon developments of astronomy during the present century.

The Elements of Machine Design. Part I. By W. Cawthorne Unwin. xiv+531 pp. (Longmans.) 7*s.* 6*d.* net.—The work before us was originally undertaken by Prof. Unwin in 1877, and made its appearance in a single volume, when it was the first English book which put the subject of machine design in a systematic and comprehensive form. In 1890 the work was revised and separated into two volumes, the first of which, dealing with general principles, materials, fastenings, shafting, pedestals, and transmission of power, is now issued in a new form. The size of the page is enlarged to 8½ inches by 5¼ inches, thus providing room for the many excellent and clear drawings. Without departing from the original plan or scope—the book is still the familiar "Unwin" with which engineers all over the world are so well acquainted—the author has not merely revised, but has almost completely rewritten the matter. The first 130 pages are taken up with materials, straining actions, and strength of materials, and here we find numerous references to recent experimental work as well as to the work of the Engineering Standards Committee. The remainder of the volume is devoted to machine details and their design, the whole being put in such a manner as to minimise the labour involved in calculation to the designer. The drawings are thoroughly up-to-date; many old ones have disappeared and new designs are inserted. There are few engineers who do not owe a debt of gratitude to this work and will not welcome it in its new form. We understand that it is intended to issue Part II., dealing with engine details, in a similar form at some future date.

The York Air Tester, for the Rapid Estimation of Carbon Dioxide in Air. (Griffin.) £4 net.—The authorities responsible for the proper ventilation of class-rooms and dormitories will do well to consider the merits of this piece of apparatus. It consists essentially of a wash bottle containing a definite quantity of standard solution of barium hydroxide, with phenol phthalein as an indicator, and a pump, by means of which a measured volume of air is passed through the solution in the wash bottle. The solution must first be calibrated against pure atmospheric air, the apparatus being placed at an open window for the purpose. When once this has been done, reference to a table gives directly the parts of carbon dioxide in 10,000 parts of air tested. The preparation and standardisation of the necessary solution have been reduced, so far as is possible, to purely mechanical operations, an ingenious arrangement being supplied for storing the baryta solution and transferring it to the testing tube without change of strength. The use of this apparatus may be taught to a person without previous chemical training. If directions are followed the method cannot fail to give an accurate result.

Pedagogy.

Education and Industrial Evolution. **By Dr. Frank Tracy Carlton. The Citizen's Library. (New York: The Macmillan Company.) 5*s.* net.—This, the latest addition to the valuable series of monographs forming the Citizen's Library of Economics, Politics and Sociology, will be read by all students of contemporary educational movements with great interest and profit. The work under review opens with a suggestive sketch of the development of the educational systems of the United States from the early days of the New England settlers to the present time, emphasising the slow transition from the "aristocratic" to the "democratic" conception of education, that is, "from the leisure-class ideal of education for culture and discipline to the industrial, utilitarian, and democratic ideal of education as a means of improving civil and industrial efficiency." The keynote of the book, as indicated by the title, is that the great social and industrial changes now taking place with ever-increasing acceleration demand an entire readjustment of educational methods, organisation, and curricula. The main criticism which may perhaps be urged by English educationists is that Dr. Carlton unduly deprecates education as a "means of life" in his just insistence upon the necessity for education as a "means of livelihood." Strictly speaking, the two ideals are not irreconcilable. The author would have disarmed much possible opposition by emphasising what is now being gradually recognised, namely, that an education which steadily keeps in mind the future life and career of the child or student can be made as effective a means of culture and discipline as the older forms of education which have been handed down to us from the Renaissance.**

As regards the definite proposals and suggestions made by the author, these are mainly concerned with present-day problems affecting education in the States. There is, of course, a broad similarity between these proposals and those made from time to time by English educationists for adoption here. Thus Dr. Carlton insists upon the necessity for the medical inspection of school children, the establishment of school nurseries, more training in domestic subjects and household economics for girls, manual training on broad educational lines throughout the whole of the school period, the enlistment of the forces of organised labour in support of educational progress and reform, the establishment of "trade schools" and evening continuation schools, increased facilities for technical and university education, travelling libraries for rural schools and rural communities, a wide development of agricultural education, "parental" schools for the truant and juvenile delinquent, "vacation" schools, and the development of primary schools as social centres for adults and as playgrounds for the young. English educational thought, while generally prepared to support these suggestions, will probably not endorse the proposition of paying children to go to school, as "a logical consequence of the policy which provides free tuition, free text-books, free playgrounds, and free medical aid for schools."

CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in* THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.

Study of German in Secondary Schools.

I ENCLOSE herewith a copy of a second letter on the study of German in secondary schools, which has been addressed to the President of the Board of Education by the bodies the signatures of whose representatives are appended. (*Signed*) G. F. BRIDGE.

(Hon. Sec. Modern Language Association.)

45, South Hill Park, Hampstead, N.W.

To the Right Hon. the President of the Board of Education.

SIR,

On behalf of associations and other bodies concerned with the study of modern languages we, the undersigned,

beg to convey to you our sense of disappointment generally with the "Memorandum on Language Teaching in Secondary Schools in England" (Circular 705) and our dissent in particular from several of the doctrines and statements laid down in its concluding paragraphs.

We desire, in the first place, to say a word on one point which was not directly referred to in our former letter, but which we feel to be of great importance. It is shown conclusively that the Board of Education has not obtained, and cannot obtain, the materials required for making the return on the time allotted to modern language teaching in schools in the exact form that the motion in the House of Lords made on February 5th, 1908, demanded, but there seems no good reason why the Board should not furnish Parliament and the public, in whatever shape it thought good, with the information suggested by the motion. What we desire to know, and what the Board has full power and opportunity for ascertaining, is the present condition of modern language teaching in secondary schools, the place assigned to it in the curriculum by headmasters and governing bodies, the relation in which it stands to the teaching of classics and of English, the qualifications, emoluments and status of its teachers. On these points the memorandum throws no light, for it is impossible to draw any conclusion from the reports of the Board's inspectors therein summarised. Worse than this, the Board, while acknowledging the great value of an investigation conducted on the lines that are here suggested, can see no prospect of its undertaking the work for years to come. We would respectfully submit to the Board that it would be possible at least to give as full and adequate an account of the state of modern language teaching in England as has been given about the teaching of various subjects in the special reports on more than one foreign country.

In another respect the memorandum is equally disappointing. The circulars issued by the Board on the teaching of history, geography, and geometry were well-considered documents sanctioning the views of experts in their respective subjects. They have greatly influenced educational opinion and have been welcomed as practical aids to teachers. We looked for something analogous in a memorandum on language teaching, but we search in vain. We feel that many would welcome guidance on those questions which are now engaging the attention of modern language teachers—*e.g.*, the new or direct method of teaching, use of phonetics, compulsory oral tests in examinations, prescription of set books.

In particular we desire to take exception to paragraph (16) of the memorandum, which professes to answer a letter on the position of German in secondary schools addressed by us to you in November, 1908.

It is granted that "the advance in the study of German is not at the present moment as rapid as the advance in the study of French or even of Latin." We would submit that there has been no advance in the study of German, but rather a rapid and alarming retrogression. If the present rate of decrease in the number of candidates offering German in the Local examinations continues, there will in three years' time be no candidates in German for the Oxford Locals and in about four years' time none for Cambridge Locals.

The statistics set forth in the memorial were, for the sake of brevity, confined to Local examinations, but the figures of the Joint Board examinations, of the Army Entrance examinations, the Army Qualifying examination, and of the examinations of the College of Preceptors all point to the same conclusion.

As regards the contention that "the curriculum of schools is necessarily guided by the course of the universities to which it is to lead," we would observe that only a fraction of the pupils in State-aided schools proceed to the University, and no curriculum can be deemed satisfactory which does not satisfy the needs of the bulk of the scholars. The majority of the pupils in these schools leave school before the age of seventeen, and it is allowed that for such pupils, "both practically and educationally, German is a language of the first importance"; yet the Board throws the whole weight of its influence into the scale of Latin as against German, apparently out of consideration for the one boy in a hundred who will go on to the University. And in this case what would be confessedly good for the many would be no less good for the favoured few. The number at Oxford and Cambridge taking medicine, science, and modern subjects is rapidly on the increase, and it is a constant cause of complaint among the professors and teachers of these subjects that their pupils come to them heavily handicapped by their ignorance of German. It is hardly necessary to insist on the value of a knowledge of German to honour students in every faculty.

Our suggestion that the Board should encourage and foster schools of the type of the German Realschule and Ober-Realschule is not noticed, but it is indirectly negatived by the insistence on Latin as one of two foreign languages where two are taught.

We would reiterate our conviction that a sound and thorough literary training can be given through English, German, and French, without a knowledge of Latin. If, in the words of the memorandum, English can serve as "the backbone of a humanistic education," surely a combination of English, German, and French would constitute a valuable type of humanistic education.

We greatly regret that the Board has not, as yet, seen its way to lead public opinion on so vital a matter as the study of modern languages, and we express a hope that the memorandum is not its last word.

Signed on behalf of the Modern Language Association: A. A. Somerville (chairman of committees), E. L. Milner-Barry, H. W. Eve, A. T. Pollard, F. Storr.

Signed on behalf of the Society of University Teachers of German: Karl Breul, H. G. Fiedler, J. G. Robertson, A W. Schüddekopf.

Signed on behalf of the Teachers' Guild of Great Britain and Ireland: H. Wesley Dennis (chairman of council), Walter Rippmann.

Signed on behalf of the British Science Guild: J. Norman Lockyer (chairman of committee).

On the Determination of the Refractive Index for some Liquids.

THE following apparatus may prove useful in schools where light is studied practically. The tank is constructed easily and quickly, is cheap, and, moreover, the method enables a student to obtain the refractive index of several liquids in a very short time. The determinations involving the use of the tank naturally follow the determination of the refractive index of glass, using a slab of glass and pins. The principles involved in the use of the tank are then easily understood. Two strips of glass about 10 cm. long and 2 cm. high are taken, and a vertical scratch is made on each strip so that the horizontal distance between the scratches *a b* is about 15 mm. (Fig. 1). The strips are then fitted upright in a parallel position in a bed of plasticine, and the ends closed securely with a piece of plasticine. The distance between the strips should be about 15 mm. A groove is sawn out in a block of wood so that the tank will fit in easily, the bottom of the strips

of glass level with the top of the block. Fig. 2 shows a plan of the apparatus. Any space in the groove should be filled with plasticine and levelled.

To determine the refractive index (μ) of water.

Half fill the tank with water. Place a protractor, P, so that the mark on it and the scratch on the glass exactly coincide at M. The edge of the protractor must touch the

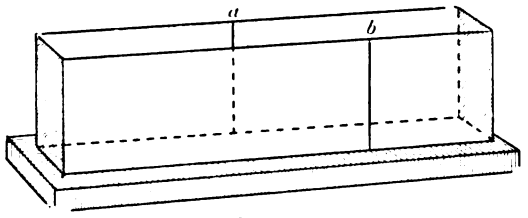

FIG. 1.

side of the glass at all points. Now stick a thin needle (N) in the wood at the edge of the protractor so that the two scratched marks (M, M′) and the needle are in an exact line when viewed *through* the water. Read off the angle between this needle and the normal R. This angle will represent the angle of incidence. Move the needle at N to N′, so that the two scratched marks M, M′ and the needle at N′ are in an exact line when viewed above the water, *i.e.*, *through* air. Read off the angle between the needle N′ and the normal R. This angle represents the angle of refraction. The refractive index is now easily calculated.

Example, using Water.

Angle of incidence $= 68°$ $\sin \angle 68° = 9272$.

,, refraction $= 43·5°$ $\sin \angle 43·5° = 6884$.

Index of refraction $(\mu) = \frac{\sin \angle \text{ of incidence}}{\sin \angle \text{ of refraction}} = \frac{9272}{6884} = 1·34$.

The following liquids are suitable for use in the tank:

	(μ)		(μ)
Alcohol ...	1·36	Olive oil ...	1·47
Glycerine ...	1·47	Benzene ...	1·49

When using benzene or glycerine the experiment should be carried out as expeditiously as possible, as these liquids

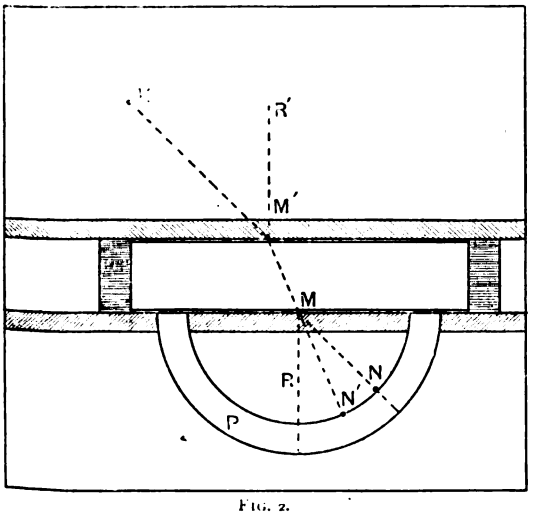

FIG. 2.

exert a slight action on the plasticine, rendering it soft. The action is not sufficient either to interfere with the experiment or ruin the tank if the liquids are not allowed to remain in too long.

To prove that the Angle of Emergence = the Angle of Incidence.

Place needles K and N so that K, M′, M, and N are in a straight line when viewed *through* the liquid in the trough. Read off the angle of incidence between the needle N and the normal R. A similarly placed protractor on the other side of the trough gives the angle of emergence KM′R′. When changing liquids in the trough the latter should be drained, and then any adhering liquid absorbed with blotting paper.

E. T. BUCKNELL.

Kingsholme School, Weston-super-Mare.

German Songs.

SONGS as an aid to modern language teaching are not used as much as they might be in our schools. And yet—especially in teaching German—they are one of the most useful "Unterrichtsmittel" that a teacher can employ.

Singing is certainly a valuable aid in teaching pronunciation, providing, of course, that the master insists on distinct enunciation. A child singing in chorus acquires more confidence in himself; he learns to appreciate the rhythm of the language, to give the different syllables their full value, to avoid the clipping and slurring over of sounds so common in English. Moreover, children are very apt to mumble if they get half a chance, and they cannot do so in singing.

In addition to this, a child who has learnt a number of songs by heart—and he does this unconsciously by dint of singing them—has acquired a large stock of words and phrases which are useful to him later in his reading and writing. If one of my boys is at a loss for a construction in German I often refer him to a line in one of the songs he has learnt. For instance, "Es zogen drei Burschen wohl über den Rhein" is an example of the introductory "es" and the agreement of the verb with its real subject—and an example he is not likely to forget. Again:

"Wem Gott will rechte Gunst erweisen,
Den schickt er in die weite Welt,"

is an example of a German construction which is not by any means easy to learn. One could multiply examples with the greatest ease.

But there are higher lessons than these, useful as they are, to be drawn from German songs. No master leaving his pupils in ignorance of the wealth of German Volkslieder can reasonably hope to give them a just conception of German life, for the one is closely bound up with the other. The Germans are essentially a musical nation; they are passionately fond of their Volkslieder, sing them continually, and nothing touches their hearts more quickly than to hear them sung. A favourite quotation of theirs runs (I will not vouch for verbal accuracy):

"Wo gesungen wird
Da lässt sich ruhig nieder,
Böse Menschen haben keine Lieder."

The best part of Germany is mirrored in its songs, patriotic, romantic, sentimental, and at the same time practical Germany. Nay, its very history may be read there, throbbing with life, glowing with the living fire of patriotism. Note the fierce rush of words in "Lützows wilde Jagd":

"Was glänzt dort vom Walde im Sonnenschein,
Hör's näher und näher brausen!"

As we sing we hear the swift rush of the galloping horses, fierce-eyed men sit firm in their saddles, and amid the clashing of steel the foe is driven back:

". . . die wackern Herzen erzittern nicht.
Das Vaterland ist ja gerettet."

These are the battle songs of a Germany fighting for freedom. Did those fierce, determined men think of the mothers who had bidden them go forth and drive out the

stranger and the usurper, of the sisters who had given their all, and sold even their hair, to provide the sinews of war? Surely they must have done.

Or we sing:

"Guter Mond, du gehst so stille
Durch die Abendwolken hin,
Labest nach des Tages Schwüle
Durch dein freundlich Licht den Sinn."

Then we have another picture of a peaceful, industrious Germany. Men sit outside their cottage doors after the labour of the day, children play near at hand, and the thrifty housewife knits or sews.

Speaking of children, was there ever a more delightful child's song written than "Wer will unter die Soldaten"?

"Wer will unter die Soldaten,
Der muss haben ein Gewehr,
Das muss er mit Pulver laden,
Und mit einer Kugel schwer."

What a pity that children should study German and know nothing of this most charming side of the language. A great deal has been said and written about *Sprachgefühl*, but surely it is equally important to cultivate *Heimatsgefühl*, so that the child's horizon may be widened and he may be taught to look upon Germany as part of that great and beautiful world in which he lives. A boy's sympathies may be widened without his patriotism being weaker, and certainly if he is taught to sing and understand some of the numerous beautiful German songs, to feel their appeal, and to realise that thousands of children in Germany are singing them also, he is more likely to feel the sympathy necessary to the proper study of a language.

Every modern language teacher agrees, I imagine, that "atmosphere" is of primary importance, but we cannot, I think, create an atmosphere by merely saying: "Boys, now we are in France (or in Germany). This room is a French (or German) restaurant, or a shop, or a post-office, or a railway station. You cease to be English schoolboys and turn into waiters, guests, railway officials, shopkeepers, policemen, soldiers, &c." Apart from the fact that I would not care to turn my worst enemy into a German waiter or railway official, much less one of my boys—waiving this as mere personal prejudice—I must confess that I am incredulous as to the success of such a beginning of a lesson. For it seems to me that the only atmosphere we can hope to create, or indeed need seek to create, is a spiritual one—and personally I know of no better means of creating it than by allowing the class to sing a German song at the beginning of the lesson. I say "allowing the class to sing," for I find the boys look upon it as a favour and ask to be allowed to sing. And this attitude of theirs is, of course, essential; otherwise no atmosphere is created.

My class and I are borne "auf Flügeln des Gesanges" to a spiritual Germany, where with German children we stand around the "Weihnachtsbaum" and sing:

"O Tannenbaum, O Tannenbaum,
Wie grün sind deine Blätter."

Or we sing:

"Wer hat dich, du schöner Wald,
Aufgebaut so hoch da droben?
Wohl den Meister will ich loben,
Solang noch mein' Stimm' erschallt."

And as the last soft "Lebe wohl" dies away, who shall say that we do not stand in a forest as beautiful and as real as any "von dem Meister aufgebaut"?

REGINALD WAKE.

Pure Copper Oxide.

WITH regard to Mr. H. G. Williams's difficulty, the best way to obtain pure copper oxide is from the sulphate. Take some copper sulphate solution, boil, and at the same time add potassium hydrate solution gradually until the blue colour disappears. Continue boiling for half an hour, wash the precipitate by decantation several times, filter and wash with boiling water, then dry, and a pure sample of copper oxide will be obtained.

The nitric acid method works well if the impure copper oxide is added in small quantities to boiling concentrated nitric acid, always having excess of acid; then proceed as usual.

S. ALLEN.

Advice to Examiners

READING through the last issue of the *Indian Review* I came across the following quotations, which were printed as advice to examiners. It occurred to me that the aphorisms would be as well worth the attention of examiners in this country as of those in India. I append the cutting.

CANDIDATE.

If examiners bore the following axioms in mind when drawing up papers it would be an excellent thing for education:

"An enormous mass of materials is not instructive to the learner."—*Seneca.*

"Erudition is one of the enemies of real education."—*Guyau.*

"The aim of education is not the production of a many-sided knowledge, but of a many-sided interest."—*Rein.*

"The true object of education is to instil the greatest number of generous and fruitful ideas."—*Guyau.*

"The work of a teacher is twofold, producing thought and training it."—*Thring.*

"The great thing to be educed is self-teaching."—*Rousseau.*

"The teacher's part in the process of education is that of guide, director, or superintendent of the operations by which the pupil teaches himself."—*Payne.*

"When we wish to make young people learn too many subjects, and even these too rapidly, we are overtasking their will and intellect, and we are giving them no leisure for reflection to grasp what they have done, or to prepare for fresh conquests."—*Fouillée.*

"Education is the development in the individual of all the perfection of which he is capable."—*Kant.*

"Knowledge is not Wisdom."—*Bacon.*

"The purpose of teaching is to bring ever more out of a man rather than to put more and more into him."—*Froebel.*

"The process of education consists in training faculties."—*Combe.*

"The whole work of Education may be summed up in the concept Morality."—*Herbart.*

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