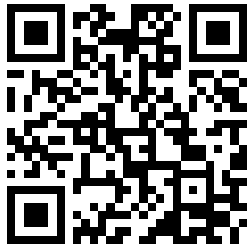

The School World

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The School World

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ECONOMY IN TEACHING.

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TEACHERS are getting a little bored with the persistent protests against what is called the water-tight compartment method by which each subject is kept rigidly to itself. We all admit that the system is bad, and there is a general belief that it now ranks with those that have had their day. It has not, however, ceased to be. Every school that has a sufficiently large staff to secure the benefits of the division of labour purchases these benefits at the price of some of the evils that have given the water-tight compartment system its bad reputation.

In the lowest classes in school there is a good deal to be said in favour of a certain fluidity of curriculum. In the course of the day's work there should be considerable freedom allowed the teacher in passing from one subject to another. At this stage he professes all the subjects in the curriculum, and he must be relied upon to keep a balance among the subjects that compete for attention. In the higher classes it is no longer either possible or desirable to have one teacher responsible for all the subjects in a form. It would take an Admirable Crichton to do justice to all the demands made on the man who should dare to undertake all the subjects of the sixth. Specialism is inevitable. But as soon as a man attains special excellence in one subject, and becomes responsible for the teaching of that subject throughout the school, he naturally and properly fights for the best place on the time-table for his work. He inclines to build a wall round his subject, and to erect a notice-board warning off poachers. The notion of co-ordination with other subjects does not attract him. He rejoices when he reads the impracticable correlation schemes of enthusiastic teacher theorists: takes pleasure in demonstrating the hopeless morass that results from the pooling of subjects that he maintains ought to be independent of each other.

The consequence is that in our schools at the present moment there is an appreciable waste of energy caused by the overlapping of the work of the various members of the staff. The best results possible are not obtained because some of the work is done twice over, with no advantage accruing. For example, in the teaching of the mother tongue as a means of communicating ideas, the teacher of English complains that his pupils have not time to do as much practice in composition as is necessary to secure skill. It is not that the pupils do not have enough writing to do during every week. In a good secondary school the pupil has to write enough English to satisfy even an exacting English master; but then it is not written *as English*. An exercise in history or in botany is regarded as if it were something different from, and independent of, an exercise in the use of the mother tongue. The fact that the composition was not written as a composition, so far from being a disqualification, ought really to be regarded as a recommendation in the eyes of the teacher of English. The pupil who writes an exercise in history or in botany with no other end in view than to make his teacher understand that certain facts have been mastered is in a far more wholesome state of mind with regard to composition than is the boy who sits down and says to himself whatever is the schoolboy equivalent for "Go to! Let me write a composition on 'The Field of the Cloth of Gold,' or on 'The Respiration of Plants.'" What the teacher of composition wants to encourage above everything is the absence of anything like a deliberate intention to compose for composition's sake. The compositions written in other classes than that for English have the great advantage of being written with the proper incentive—the desire to convey the writer's meaning in the clearest way. All this additional practice in writing does produce good effects on the composition of the pupils, but still better results might be obtained if the English master had all the ordinary written exercises sent to him after the other teachers had done with them.

This sounds as if the at present overburdened English master were to have his miserable life made more miserable by an intolerable increase in the amount of "corrections." But his colleagues must be called upon to take a certain share in this work of correction. The teacher of history or botany will naturally be mainly—indeed, all but exclusively—interested in the *matter* of the exercises, and will mark them from this point of

view. But while the English master cannot be fairly expected to know botany, the teacher of botany may be fairly assumed to know English, at least to the extent of knowing the commoner kinds of blunders against which his English colleague wages an all but hopeless war. Most boys and some masters work on the assumption that in exercises on other subjects mistakes in English "don't count." Could a worse example be found of the water-tight compartment fallacy? The pupil is learning English all the time, and it is the business of every master to take a hand in the work as occasion arises. It is not to be expected that the other masters should *correct* mistakes in English. It is enough that all such errors should be indicated by appropriate traces of the coloured pencil. A code of significant marks is easily devised, and by its use the teacher of English would be relieved from an inordinate amount of drudgery, at the cost of a trifling additional outlay of energy by the teachers of other subjects. The advantage of this co-operation would not be confined to the English master. The exercises in all the other subjects would show a marked improvement in form.

Between the classical master and the English master there should naturally be a still closer co-operation. English grammar and Latin grammar must not be held to be necessarily distinct from one another. It has to be admitted that there are important differences between the two, and these differences have to be respected. But it is quite possible to teach English grammar in such a way as to leave nothing to be unlearned when the pupil passes from the English grammar to the Latin. Too often the two grammars seem to the boys not only not helpful to each other, but positively contradictory. What the English master is expected to do for the Latin master must be done in turn by the Latin master for the master who takes Greek. This principle of the solidarity of grammar is recognised in the German schools, where wastage is avoided by the use of parallel grammars, by means of which the pupils find in each new language as they take it up the minimum amount of difference from the grammars with which they are already acquainted.

In no two subjects is the need for correlation more generally recognised than in geography and history. Yet even here complaints are beginning to be heard. The aggrieved parties appear to be the teachers of geography, but neither party seems to be very happy in the yoke to which both are subjected. It is a teacher of history who writes: "Correlation with other subjects of the curriculum is sometimes valuable, but where it is attempted great care is needed that the scheme in these be not sacrificed to the scheme in history. An attempt to correlate the work in geography and history often results in an undesirable scheme in geography, and the *raison d'être* of this forced correlation disappears if the history teacher realises the vital necessity of emphasising the geographical factor in history."[1] The teacher of geography, on his part, is apt to adopt a too scientific attitude, and speak contemptuously of "the comparatively unimportant divisions of the earth's surface into political areas," the implication being that the only important divisions are those that are based on natural features and material conditions. The minimum of correlation would imply that the teachers of the two subjects should arrange that the order of presentation in each should fit into that of the other. The teacher of history should never be in the position of having to explain that his map of Europe is really the same as the map of Europe the pupils have been dealing with in the geography class. There must be a certain give and take between the two subjects. The scientific teacher of geography need not postpone the teaching of the rudiments of political geography to such a late stage as will inconvenience the teacher of history. Even in the lamentable case in which the two teachers refuse to make the slightest concession to each other, there should be at least the advantage of each knowing what the other is doing. Even this small bit of knowledge will save a certain amount of misdirected effort.

Strange as it may seem, there is more lack of co-ordination in the teaching of science than in any of the other departments of school work. At the earliest stages nature-study deliberately correlates all branches of science in one vague whole. At this stage the subject is treated on what the Germans would call the *anschaulich* plane. Observations are made and collected and recorded. At a later stage the necessary differentiation appears, and we have the two great divisions: (1) the natural sciences, in which the methods of nature-study are largely continued, with, of course, a more elaborate classification, and (2) the mathematico-physical sciences. In the first group there is not much difficulty in securing correlation. Botany and zoology can hardly be kept apart, though physiology sometimes introduces trouble. It is the other group that leads to overlapping and duplication of work. In most schools where science forms an important part of the curriculum, there is a teacher of mathematics, a teacher of physics, and a teacher of chemistry. Too often these work independently of each other, with the result that the pupils are called upon to do over again the same work in different class-rooms. It is true that a subject cannot be presented from too many points of view. The greater the number of fresh applications of the same principle the better it is understood. But, unfortunately, in an unco-ordinated course each reappearance of an old principle is treated as a new incident; the principle is regarded as something having an independent existence, something to be accepted on its own merits as here and now presented. Nowhere is this better illustrated than in mensuration, which is frequently taught as a separate subject in the mathematical class-room, and then gone all over again in dynamics and physics. The striking thing is that so many pupils do not seem to recognise in physics the truths they have mastered

[1] M. A. Howard, in Prof. Adamson's "Principles of Instruction."

in mathematics. The subject of mechanics is rightly named applied mathematics, and some of the more progressive teachers of science are inclined to remove a good deal of what is usually called physics and treat it under the head of mathematics. Between physics and chemistry the relation is as close as that between mathematics and physics. So close is this connection that in text-books of chemistry it is not unusual to have an introductory chapter or two dealing with purely physical subjects.

Now since mathematics, physics, and chemistry are quite commonly all being studied at the same period of the pupil's course, it is obvious that there is great room for injurious reduplication of work, and still more for a lack of such a co-ordinated presentation of each subject as shall supply at the proper time the knowledge necessary to carry on the others. It is easy to see how the subject of mathematics could be so mapped out as to cover the whole ground to the entire satisfaction of the mathematical master, but to the despair of the teacher of physics. In most particulars the course in mathematics may be so arranged as to fit into the needs of physics without really interfering with the best teaching of the more abstract subject. But even if the mathematical teaching has to be slightly disarranged, this would be a much smaller evil than the positive disorganisation of the whole teaching of physics.

The practical question arises: How is the necessary co-ordination of cognate subjects to be brought about? The most obvious way, and the one that would at once appeal to an administrative officer, would be for the headmaster to determine the course in each subject. Unfortunately there are very few headmasters who have the necessary knowledge to intervene successfully in all the groups of interdependent subjects. Even in cases in which the "head" is competent to lay down a suitable scheme, it will be found better to entrust the matter to a committee made up of the masters concerned with the subjects to be co-ordinated. There is less danger of friction than would at first sight appear, for after all there is a compensating advantage in almost all cases to the master who is called upon to modify his course. If, however, the masters concerned will not come to terms, there is nothing left for the headmaster but to intervene. He may not know mathematics, but if he be a successful "head" he does know men, and it will be his duty to select the master in the recalcitrant department whom he thinks most likely both to know the best course and to be fair to his colleagues, and make this master head of the department.

The Certificate General Elementary Science. Part i. Physiography. Edited by W. Briggs. Second edition. 552 pp. (Clive.) 4*s.* 6*d.*—This volume has been specially re-written to meet the requirements of part i. of the new syllabus issued by the Board of Education. Students will find it satisfactory and sufficient for the purposes of the examination.

JUNIOR EXAMINATIONS IN ENGLISH LITERATURE.

By JAMES OLIPHANT, M.A.

AT the first blush it would seem to be a comparatively easy task to set a paper in English literature suitable for any particular stage of a school course, but a little reflection will show that, in the first place, the simplicity depends entirely on the nature of the examination, and further that under the most searching form of test, the lower the age to which it is to be adjusted, the greater will be the difficulty. It will be well to distinguish at once the three different kinds of written examination.

(1) The paper may be set by the teacher, in which case the questions will naturally have a direct bearing on the work that has been done, and take definite account of the special methods of study adopted.

(2) The paper may be set by an outside examiner, who bases his questions on the programme of reading accomplished by the candidates, but cannot, of course, have more than a general idea of the way in which the preparation has been conducted.

(3) The paper may be set by an outside examiner, whose questions are quite independent, alike of the particular books that have been read and of the lines of study that have been favoured.

It may, perhaps, be objected that these three kinds of examination are not all necessary. The value of school written papers, set by the teachers and based on the actual work done, will hardly be disputed, though, of course, their purpose is restricted to internal uses; but there may be several opinions as to the application of outside tests. The extreme position of those who would abolish them altogether need not be assailed at present; we are rather concerned with the conflicting views of the more moderate and practical educationists who believe that, whether such public examinations are for good or for evil, they are an administrative necessity. Some would hold that in a subject like English literature, at least, an independent examiner must take account of the reading that has been accomplished, either by having the programme of the work of each candidate before him when he sets the paper, or more simply, by prescribing set books to be professed by all the candidates. Others would object entirely to set books for any qualifying examination in language or literature, while a third party would advocate a combination of the two tests.

Those who are opposed to the plan of setting particular books for an open examination in English literature have much reason on their side. There can be no doubt that it greatly simplifies the task of the examiner, but that is almost its only merit. The obvious use of a public examination in testing the results attained by individual schools and pupils too often obscures the far more important function of influencing the character of the teaching that is intended to prepare for it. It is true that the more definite the syllabus that is laid down, the more ample is the

opportunity offered to the examining body of deliberately impressing its ideals upon the schools, but this advantage may be obtained at too high a cost. Too direct an influence defeats its object. Any arrangement that curtails the teacher's freedom requires to be strongly justified, and the simplicity secured by enforcing a uniform programme of reading is dearly bought at the sacrifice of every outlet for individual taste on the part of those who have to bear the burden and heat of the day. But this deprivation of choice in regard to the books to be studied is a small matter compared to the constraint that is put upon the teacher in respect of his method. Even if it were a question of substituting approved methods for others that were less effective—which would by no means always be the case—the increased rigidity would be open to serious objection. But the truth is that very little can be done in the way of prescribing methods of teaching. The teacher can only try to judge from the nature of the questions set in previous years what he must expect to find in the examination he is preparing for, and he cannot be certain of much continuity. The result is that he will perforce lay stress, not on those aspects of his subject which seem to him most fruitful, and which he would be most interested in dwelling upon, but on those that he thinks most likely to appeal to the examiner. In short, he is obliged, more or less, to *cram*, instead of educating, and the narrower the lines within which he has to work, the greater his opportunity and his temptation.

But if it be granted that a literature examination upon set books by an outside authority is open to these grave objections, and yet it be agreed that some independent test is desirable, we are face to face with a difficult problem. How can general direction be maintained, and at the same time the teacher's initiative be left free, and the inducements to unworthy methods be removed? What kind of examination paper can be devised that shall at once form a touchstone of the results achieved, and indicate the general trend which the instruction should take, without the prescription of any works, or even of authors, to be studied? Is it possible to get a uniform test for the knowledge and appreciation of the literature of the mother-tongue, that can be reasonably applied to candidates whose preparation has been gained from a great variety of sources? Perhaps it is not always possible to dispense entirely with set books, but surely a great deal can be done without their aid.

It will be granted that the prime object of all teaching of literature is to cultivate a taste for reading. If the boy or girl leaves school without any real love for books, or any discrimination between good writing and bad, the literature lessons have in this case been an undoubted failure, whatever temporary stimulus they may have conveyed. Now there are certain tests that are none the less trustworthy that they are indirect, which will reveal whether intelligent and appreciative reading has been cultivated with success in any particular school, or any class of a school, without presupposing the adoption of a prescribed list of books. The most important and the most obvious of these is, of course, some kind of exercise in free composition. Where a choice of subjects has been offered, sufficiently wide to take account of variety in taste and aptitude, the examiner can have little difficulty in deciding from the essays submitted to him whether there has been adequate study of suitable models. No natural gift of literary expression will take one far without ample opportunities of imitating, more or less consciously, those who have helped to form our language into an artistic medium, and any lack of such training is soon betrayed.

Of a similar character, and hardly less useful, are the touchstones of taste and judgment and readiness of resource which are afforded by such exercises as paraphrasing, translation from a foreign language or from a bygone stage of the mother-tongue, précis-writing, criticism of examples of faulty composition, and the construction into an artistic whole of materials supplied in imperfect order. These exercises are commonly associated rather with language-study than with literature, but it is to be noted that they have little relation to the analytical and formal aspects of the teaching of English, and are really part of a training in literary synthesis. There is, indeed, a danger that a system of cram may be introduced even here, an inordinate amount of time being devoted to mechanical practice, in the hope of developing a certain knack; but teachers who are not enlightened enough to avoid this on any higher grounds will probably come to find that it is a blunder as well as a crime to delay over dry bones, instead of offering the mental nourishment that can only be found in abundant reading.

I would claim, then, that all exercises in composition, and all questions requiring a constructive effort in artistic expression, are to be looked on as legitimate parts of an examination in English literature, on the ground that they virtually presuppose a careful study of the best models, and that the most far-sighted preparation for them would follow the lines which ought to be encouraged. But it will often be desirable to take direct cognisance of the actual reading that has been accomplished. This may be done with varying degrees of definiteness. In some cases it may be enough to ask for an account of some book that has been recently studied, leaving it entirely to the candidate to choose what work is to be dealt with. Or certain limits may be laid down within which the choice must fall. It is, perhaps, assumed that all the candidates have read at least one of Shakespeare's plays or one of Scott's novels, and they are asked to describe a plot or a character taken at their own discretion from these sources. In the case of pupils who have reached the end of a full secondary-school course, a general acquaintance with the history of our literature may be taken for granted, and

questions may be put to test their knowledge of some of the approved masterpieces, provided a sufficient option is proposed.

But it is time to come to the special point of this paper, namely, the question of the proper scope of an examination paper in English literature for pupils of fifteen or sixteen years of age, whose systematic study of the classic writers has not been carried on long enough to lead to anything like a general knowledge of the subject. For the sake of brevity, it may be assumed that the taste and judgment acquired by such candidates have been to a large extent indirectly tested in a general English paper, by the composition and similar exercises which have been already referred to, and that it is now simply a question of the reading which should be prescribed, or at least suggested, for their study, and of the aspects of their work on which the chief stress should be laid. It may be well first to say a word as to the claims of questions on matters of technique to a place in a literature paper pure and simple. The analysis of structure, whether philological, grammatical, rhetorical, or metrical, cannot be altogether excluded, for there can be no full appreciation of a literary product without some understanding of the medium with which the artist has to work; but it is important that this element should be quite subordinate, and should be looked upon as a preliminary, on which no more time is to be spent than is necessary. The same may be said of questions that refer to the incidental information that is gained by reading.

Literature is not to be treated primarily as a treasury of useful knowledge, but some research into an author's allusions is often essential to a firm grasp of his meaning, and it is fair enough that the industry and intelligence of the candidates in this respect should be a matter of inquiry. The major part of the paper, however, should in my opinion make a demand upon efforts of a constructive, or at least of a *re*-constructive kind. What the examiner must, above all, seek to find out is how far the books read have been appreciated as works of art, how much interest has been aroused in the subjects they dealt with, how intimately the spirit of the author has affected the readers. It is no easy task, indeed, to institute a searching inquiry into these elusive impressions, in the case of boys and girls who have scarcely reached the critical and introspective age. To ask openly for a record of their æsthetic perceptions and emotional experiences would defeat the object in view; it is imperative to beguile them into betraying their thoughts and feelings unawares. One or two suggestions may be offered as to how this can be carried out.

Let us suppose that the reading accomplished has included a Shakespeare play, one of the Waverley novels, one of Tennyson's or Scott's longer narrative poems, and one of Macaulay's biographical essays. In all these a story is told and characters are introduced. The best test of the readers' appreciation is the degree in which they are able to enter into the mind of the author, and realise the events and figures that are represented. If the candidates are asked to re-tell any of these stories, or parts of them, or to outline the portraits of any of the characters, a comparison of the various attempts will make it pretty clear to what extent an independent outlook has been encouraged. Where the same criticisms, expressed in only slightly-varied phraseology, are found running through the majority of the papers, it is plain that they have been mechanically assimilated from the notes of the text-books, or from the teacher's lectures. There is no need, however, to confine the literature questions to the reproduction of narratives or the description of characters. These would tend to become stereotyped, even though the conditions of the task were so varied as to demand some freshness in the handling. It is desirable to introduce an opportunity for more purely constructive work that will still have a direct bearing on the books that have been studied, and assume an intimate acquaintance with them. For example, the candidates may be asked to criticise the action of one of the characters at a particular juncture, or to write an imaginary letter from one of the characters to another, or to suggest a different ending to the story. In these or other similar ways a call may be made on the imagination to deal with familiar material under limitations that should form an excellent test, alike of appreciation of the author's work, and of the judgment and taste and creative faculty that its study has helped to develop in the readers.

It has been taken for granted that the bulk of the reading prescribed for junior candidates will consist of stories of one kind or another. It is right that such works should form the staple food at this age, but not, of course, to the entire exclusion of literary forms of a different kind. Among the shorter poems that may be considered appropriate there will be some of a descriptive, and possibly even of a reflective type, and in prose there will be essays, such as those of Lamb, or De Quincey, or Leigh Hunt, that come under the same categories. How are these to be treated in an examination paper? The safest test of the understanding of a descriptive or reflective poem is probably to ask for a paraphrase, either of the whole in a general way, or of chosen parts in greater detail. The attempt to render the poet's meaning in sober and simple prose calls many valuable faculties into play, and the ability to deal with the task successfully is a sure proof of intelligent appreciation. In the case of prose essays that are not of a narrative kind, a paraphrase, or some other form of reproduction, may be asked for, or the candidates may be required, not only to expound, but to discuss, the author's views on particular points. It is a mistake, however, to expect much from junior candidates in the way of criticism of an author's style; they cannot have the experience that would warrant a personal judgment, and are bound merely to repeat the accepted opinion.

EXAMINERS AND EXAMINATIONS.

WE have recently had two pronouncements of some interest on the subject of examinations. The principal of the University of London, in distributing the prizes at Aske's School, Acton, called down an educational blessing on the head of those who make one examination serve in the place of two; while the Chancellor of the University, in his charming discourse at the opening of the L.C.C. Day Training College, after classifying the population into the two great divisions of examiners and examinees, suggested the necessity for a training college for examiners —greatly to the delight of his hearers, who belonged for the most part to a third class: those whose duty it will be to prepare the examinees for submission to the tender mercies of the examiners.

It may be worth while to consider the uses and the disadvantages of the examination system, which has undoubtedly developed greatly during the past few years, following in the wake of the great development in secondary and technical education which has been a marked feature in the social history of the past twenty years.

The utility of an examination system is generally recognised; without some system of intellectual stocktaking there is liable to be, on the part of the teacher, much wasted effort. One is often tempted to neglect the driving home of dull but necessary detail, to dwell too much on the interesting and the picturesque, to take for granted that the pupil has mastered what he has been taught, and has made it his own, when it has really not been assimilated at all. There is no more useful experience for a clever and enthusiastic young teacher than to set examination papers to his pupils, and honestly face the result. He generally learns a very useful, if somewhat humiliating, lesson himself, and his subsequent lessons to his pupils are frequently much more valuable and much less "showy" from an inspectional point of view. To the pupil, too, examination is valuable; dull work is very difficult to do "for its own sake"; and the stimulus of an examination, the gaining of some material evidence, such as a certificate affords, is necessary to make most of us use our brains.

On the other hand, if preparation for an examination degenerates into cramming, if matters "not in the syllabus" are deliberately neglected or avoided, or if the winning of a prize or certificate is regarded as the end in itself, then the influence of examination is bad, and the objects aimed at are missed.

At all costs, multiplicity of examinations should be avoided. This has not been done in the past. Secondary schools have suffered greatly in this respect. Schools of this type have often been examined three or four times over by different examining bodies. There has usually been a "school examination" required by the scheme, a "scholarship examination," and a "certificate examination," to say nothing of preliminary examinations required by various pupils commencing professional life. Thanks to the efforts made by the universities, much has been done to co-ordinate the work in schools. A useful example of what can be effected in this way is the work done in Middlesex and Surrey by the University of London. The School Leaving Certificate and the Junior Schools examinations are held in all the secondary schools in the counties, and on the results the report on the school work is based, university certificates are awarded, and county council scholarships are given. Examinations which used to last for from eighteen to twenty days, involving the working of papers on the same subject three times for three separate examining bodies, are now completed in six—a clear gain of twelve to fourteen days, to say nothing of the advantages of working on uniform lines. The arrangements that have been made between the universities for accepting one another's matriculation or "local" certificates, too, mark a great step in advance.

All these "business" arrangements, however, will not bear full fruit unless something is done on the lines that Lord Rosebery suggests—the formation of a "school of examiners." Nowadays very few dispute the necessity for careful training of teachers. It is no less necessary that the examiner—the critic who appraises the value of the teacher's work, and stamps it with his certificate as good, bad, or indifferent—should be trained in a good "school" and should have good credentials. The old days of the "tame examiner"—the local clergyman who used to be employed by the governors of the school to ban or bless—are happily over. He generally blessed, because banning was frequently followed by his displacement in favour of a more complaisant examiner; but he has departed, and in the case of secondary schools there is usually no doubt as to the credentials of the examiner. The certificates awarded by the universities are, as a rule, valuable evidence of attainment, and the "schools examinations" are not conducted for profit, but as part of the educational work of the university. There is every indication that in the course of the next few years a judicious combination of examination with inspection, under the guidance of the universities, will greatly raise the level of secondary education.

In the case of evening schools and technical classes matters are not so satisfactory. There are great difficulties in the proper organisation and conduct of these classes. The number of students in evening classes is very large, and often a teacher is confronted with students of varied ages and attainments, some well prepared in preliminary subjects, others very ignorant. The provision of courses to meet the requirements of such students is a matter of considerable difficulty. The Board of Education has not attempted to organise a general examination which will not be too hard to discourage students, who are often severely handicapped by previous disadvantages, and will at the same time be of a sufficiently high

character to mark some considerable degree of attainment and of industry.

At present the work is done by a number of different examining bodies; there is much overlapping and variation of standard, and the supervision and control of the different examinations that go on in the spring in our polytechnics and evening schools is a bewildering task. The Board of Education examines in science and art; the City and Guilds of London Institute, the Society of Arts, the London Chamber of Commerce vie with one another in the certificates and prizes which they offer for the students' choice. Students in increased numbers are flocking for examination, and co-ordination is a pressing necessity.

It is probably the chaotic condition of evening class education that has led the National Union of Teachers to form its Examinations Board. To quote from a circular which the Union issues:

> In the organisation of evening schools, the wisdom of providing carefully planned and graded courses in related subjects of practical utility is now generally recognised. To meet the need for guidance in the arrangement of schemes of study, the N.U.T. have now for some years issued a syllabus containing detailed courses in subjects of specialised instruction, and to the adoption of these courses in evening schools the Board of Education have given their consent. Examinations will be held next spring, and certificates awarded to the successful candidates in each grade. A student is thus enabled to record his attainments at definite stages in each course, and the possession of such a certificate is valuable testimony to his diligence in pursuit of that knowledge which shall render him more capable in the performance of his daily work.

That the examinations meet a pressing need seems to be proved by the fact that 10,500 candidates entered for the examination in 1907. The papers set in the examination are sensible and straightforward, evidently the work of practical teachers who can gauge the capacity of the average evening student. It is important, however, to note that the "recognition" of the Board of Education is limited to the syllabuses issued by the Examinations Board. No responsibility is undertaken as to the standard of the examination, or recognition given to the certificates awarded. Several local education authorities, however, recognise the certificates as entitling their students to prizes, and evidently the Union may congratulate itself on having done good work in the evening schools; if recognition could be given by the Board of Education to the certificates there would be an even greater field of usefulness open.

There is, however, one branch of the work undertaken by the Examinations Board which is surely inadvisable. It examines teachers and awards diplomas of various kinds. There is a general diploma in the theory and practice of education, and diplomas in manual training, needlework, and dressmaking. Now that the universities are awarding diplomas in education, and the larger technical colleges diplomas in the other subjects mentioned, it would be sounder educational policy to leave the work to them rather than to examine candidates and award diplomas which must carry less prestige.

THE DETERIORATION OF THE SECONDARY-SCHOOL MASTER.

By G. H. CLARKE, M.A.
Headmaster of Acton County School.

THE prospects of assistant-masters and the deterioration in the supply of them, consequent on their miserable salaries, have been frequently discussed. It is proposed here to consider the situation from the educational side and to suggest a remedy for what is really a case of effect and cause.

It may naturally be expected that schoolmasters should be drawn from the universities. Unfortunately for the schools the disabilities of schoolmasters are now well known: their uncertain promotion; their insecurity of tenure; their low scale of pay, coupled with long hours of work, which often have to be lengthened by extra tuition for the sake of additional fees; and the fact that no other country of the importance of England is so careless of its teachers; these and many other drawbacks are matters of common knowledge. Consequently (and here we talk of "cause") far fewer graduates in proportion, than used to be the case, are becoming schoolmasters.

Of graduates who do brave all and enter the teaching profession, the best, possibly, are drafted into the public and the leading preparatory schools. Though these men may be the most promising, they nearly all suffer from want of training, and many also from the effect of vicious systems. At a school considered our greatest, it was, and may be still, the custom to put boys on to translate in a regular, known rotation. There was time enough for about a quarter of a class to stumble through a few lines each lesson, so boys only prepared their translation every fourth day, when they knew their turn would come.

Amongst the supposed best schoolmasters, therefore, many weaklings are to be found. Apart from these, the bulk of the teachers of the present day is drawn from four classes (and now we pass to "effect"):

1. *Schoolboys and Foreigners.*—A large number of boys on leaving school have no career open to them. They take a post at a private school while they "look round." Many of these manage to pass the London Matriculation examination, and on the strength of their certificate continue to act as schoolmasters for the rest of their lives. In the same class are foreigners, who come over to England for various reasons. Certain of these make capital teachers and, by reason of their better previous education, are more skilful than their English colleagues; but most of the best return to their own country. Though many excellent individuals are comprised in this group, it cannot be said that they are equal, as a rule, to the task imposed on them. Yet a census would show that a larger number of such men are employed in teaching boys than outsiders imagine.

2. *Birds of Passage.*—As one volunteer is worth three pressed men, so the man who enters a pro-

fession intending to stick to it is more valuable than the amateur who takes it up for a year or two. The army of schoolmasters is unfortunate enough to contain many migratory members. Some, now privates in it, mean to desert when they are old enough to take Orders; some are going to the Bar, others drift into journalism, others emigrate. All of these men find teaching more or less uncongenial, and perform their duties inefficiently. If it is necessary that candidates for the elementary and lower branches of school-work should settle on their profession at an early age, and should prepare for this definite purpose for years, it is obvious that the presence of untrained and half-educated birds of passage can be of little benefit to secondary education.

3. *Failures.*—In English schools there is sometimes an unfortunate wish to keep assistant-masters apart from parents. This mistaken course of action is prejudicial to a good understanding between boys and their teachers; but it has the advantage of leaving the parent in ignorance of the men into whose care he has committed his son. In many cases this is just as well. Only schoolmasters themselves know how ill fitted, by previous training, numbers of their colleagues are to carry on their work. Amongst those who have taken to teaching through failure to find any better employment we include men that have been unable to qualify for some Civil Service appointment, or have tried the Consular Service and given it up, or have not passed a "Bishop's examination" for Orders, or have been unsuccessful on the stage, or have been "sent down" without a degree. For a father's peace of mind it may indeed be well that he knows little of his children's masters. Perhaps if he knew more he would clamour for improvement.

Now that girls' schools of any standing are as a rule staffed with well-qualified mistresses it is galling to the mere man to find that he has to put up with the misfits of other callings for the education of his own sex.

4. *Elementary-school Teachers.*—The last group differs from the three others in that it is far more capable and less numerous, though it is likely to increase. Now that all too few secondary-school masters are trained, the presence of specially prepared teachers in our ranks is most salutary. Many of these trained elementary-school teachers have gone to a residential university before taking up their higher work, which they approach with rare zeal and ability. There is a fear, though, in some minds that an undue proportion of men trained on elementary lines will lower the character of our schools, whatever the improvement is in the mental status of the pupils. However this may be, headmasters are bound to appoint from this class until a larger number of other candidates, equally proficient, are forthcoming.

It is difficult to ascertain in what proportion these four classes stand to the remaining number of assistant-masters. When we remember that many private schools and a number even of "endowed" schools, whose income is limited, are chiefly staffed with unqualified men, we are inclined to assume that half the total of assistant-masters outside the great schools are unfitted for their work. The exact number is immaterial. That there should be any proportion of incapables at all is a danger to our national prosperity.

In the first place, the future supply of headmasters is impoverished, if the assistant-masters from whom they are drawn are inefficient. Indirectly, too, inefficiency amongst assistant-masters prejudices parents against education. Looking at things commercially, they see that men of high university distinction obtain only slightly larger emoluments than colleagues of no attainments. As one put it to me: "A Prime Minister and even a Minister of Education reach posts of national importance without any special hall-mark; yet you tell me that if my boy is to succeed as a schoolmaster, he ought to be able to win a scholarship and take a first class. The game is not worth the candle. He will have learnt quite enough if he leaves school at fifteen and goes into business." In spite of a certain confusion of ideas the man's meaning was clear: anyone can teach, but to rule boys a good degree is apparently wanted, a distinction that is not needed by those who rule men and nations. High ideals will not appeal to most natives of a country in which no real store is set on education. Education is talked about but not valued, and no compensating advantages are attached to more than ordinary attainments, after one's university career. Hence little attention is paid by the public to this most important point: the reflex action of indifferent masters on the training of the rising generation.

Knowledge and personality are requisite in a teacher, but men of academic distinction and of sound common sense, able to train and command, will not be found in a type of school only too common, which the owner advertises as "recognised by the Board of Education." He does not add that it used only to be recognised as a school in which a master might count his years of teaching and claim them as so much experience to qualify him for registration. This recognition is very different from that which marks a school as satisfactory. Yet even this by-form of recognition cannot be obtained by all applicants. Like master like—pupil! Schools of this kind, with the inevitably low stamp of their staff, will not help us much in our struggle with well-educated nations.

If character *can* be formed, it cannot be formed by other than the highest type of master. However stimulating the headmaster may be, he cannot directly influence a school taught by an inferior class of colleagues. Without "teachers of learning and force of character," said the British Association Committee on Curricula last summer at Leicester, "no scheme of secondary education can be satisfactory. Every effort should be made . . . to attract a high class to the teaching profession. . . . Prompt action in this matter is urgent and imperative; for, unless something is

done without delay, the best interests of the schools, and especially of boys' day schools, will be sacrificed to a false and disastrous economy."

At the same meeting Sir Philip Magnus declared that there was general dissatisfaction with the results of our elementary education. If the deterioration of secondary-school teachers continues, the education provided in a vast number of schools of the grammar-school type will become still more unsatisfactory, and our boys will continue to be famous for their little knowledge and their smaller power of applying it.

If this is the true state of affairs, and few men with opportunities of judging and powers of discrimination can deny it, some remedy must be found; the "cause" must be removed. Without additional income, schools that are now badly staffed cannot attract better masters by improving their prospects, and suffer from the "effect." We can do little for needy schools that are not in receipt of public money in some form; for them private benevolence is the only resource. Of other schools that are not wealthy, few are outside the net of the "Board" and the "local authority," except such as should be placed on a new footing or closed for inefficiency. A real improvement in the staffing of all efficient schools paying masters at a lower rate than that of the London County Council would react on all inefficient schools and improve them or sweep them away. Consequently the "Board" has only to insist on all recognised schools adopting the London County Council scale as a minimum, to raise the status of the master and the general standard of education.

Next, a register that is of some real value must be established. The prospect of earning a living would attract reasonably capable men to the teaching profession, and the compulsory registration of secondary-school masters, with fairly stringent requirements for admission to the register, would shut out many incompetents.

Can we provide sufficient funds to enable authorities to arrange that the minimum salary of secondary-school masters shall be £150, with increases on the London scale? Many schools, of course, at the present time pay reasonable salaries and rejoice in an efficient staff. In some, the London County Council scale could be adopted if the increase of the grant under the "New Regulations" were applied to the purpose. In other cases, greater economy in building and in local administration would set free sufficient money to make up the amount required to pay satisfactory salaries. The majority of schools, however, cannot be disposed of quite so easily. Of new schools under municipalities, a large number have fees so low that the contribution of each pupil only amounts to one-fifth of the cost per head. The remainder is made up out of public funds in one shape or another. Further, the cost of educating elementary-school teachers falls to some extent on the funds belonging to secondary education. For all these iniquities the secondary-school master has to pay. When a school is being started in a locality, usually the last articles to be considered are the masters. They seem to be looked on as a necessary evil, and, coming last, fare worst.

The total annual outlay on salaries of masters should amount to two-thirds to three-fourths of the cost of maintenance of a secondary school, which comes to £15 to £20 per head. If the fees + grant + local contributions do not work out at this sum in any given school, it is obvious that the desired increase can only come from two sources: (*a*) higher fees, (*b*) larger local contributions. Unfortunately, if (*a*) is impossible because the school is in a poor district, (*b*) will also be difficult to negotiate, as it entails increased rates. So there is nothing left to fall back on but taxes derived from the nation at large.

The situation may be summed up thus:

The "Board" must insist on all schools in receipt of public money working on a salary scale not smaller than the London County Council scale.

A register must be established.

Economy in administration, less extravagance in building, together with the raising of fees, must be enforced.

The salaries of headmasters must not be out of proportion to those of the rest of the staff.

The cost of elementary education must not be placed on the funds of secondary education.

If enough relief has not yet been afforded, a grant from the Exchequer must be made to necessitous districts, where fees cannot be placed sufficiently high to cover a proper proportion of the expenses. This principle is already at work. For many schools are supported out of local money, which can never be of use to many who pay the rate in question. On the other hand, many parents are enjoying the advantage of a good school, who ought to be paying three times the fees they pay for the education provided for their sons.

Such is the position of affairs. It is of vital importance to English education to find a solution, of far more importance than the age at which Latin should be begun, or the pronunciation of Greek, or the teaching of biology. For, if the nation continues to sweat masters, there will soon be no masters left to sweat.

THE FUTURE OF SCHOOL CADET CORPS.

By EDWARD C. GOLDBERG, M.A.

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THE relation of School Cadet Corps to Mr. Haldane's Territorial Army scheme has of necessity had an important place in the agenda of the meetings of the Headmasters' Conference and of the Incorporated Association of Headmasters during the Christmas holidays. In March of this year definite results of their deliberations and of their suggestions to the military authorities, as well as of the recommendations of Sir Edward Ward's committee on the provision

of officers, will appear in the details of the constitution of the new force. The historic conference of last summer between the Secretary of State and the aforesaid committee with the headmasters and the commanding officers of school cadet corps, the proposals made both then and subsequently, together with the various hints and opinions which are still under the consideration of the Army Council, will all have contributed something to the production of the new organisation. By the time the Easter holidays have ended, the remodelled cadet corps will be in full working order as component parts of the new "Officers Training Corps" to replace the system, or lack of system, which has hitherto existed. Thus the present is a favourable moment for a brief survey of the general and particular tendencies of the proposals which have been adopted provisionally as the bases of reconstruction; and it were wise, while there is yet time, to give careful consideration to the principal issues involved.

It is obviously not advisable at this stage to attempt an exhaustive treatment of details and possibilities; just as it is unreasonable to expect a complete, not to mention a perfect, system of organisation from the orders and regulations of March. Experience can alone decide what is wrong or right in particulars, and will apportion blame or praise in the omissions or commissions of such a scheme after it has been in operation. On the other hand, the temerity of comment may at least be excused in the case of one who has accomplished fourteen years of service in a large uniformed cadet corps, and who has both knowledge of and sympathy with the work of ununiformed corps.

The function of the Territorial Force is primarily home defence, with, in case of great emergency, possibility of duties of expansion. The object of the "Officers Training Corps" is the provision of prospective officers in the Territorial Force. Now here we are at once confronted with a difficulty about which it is not easy to be frank without either giving offence or being misunderstood. It is disagreeable to suggest ideas of class distinction such as true patriotism very properly condemns; but reserve in this respect is both dishonest and misleading. The proposals of the interim report of the committee on the provision of officers, and the resolution carried at the meeting in June last, include in the operation of the scheme those ununiformed corps which have hitherto received neither recognition nor financial aid from the military authorities. Under the provisions of the new system they will have the offer of opportunities, which, as will be seen when the question of age limits is considered, by the very nature of their circumstances many of them are precluded from accepting; while it is idle to suppose that their tendencies, environment, and inclinations conduce to their filling blanks in the ranks of the officers in the second line of defence. Let us look this matter fairly and squarely in the face, and ask ourselves if in the very application of the name "Officers Training Corps" to a military organisation containing such elements there does not lie a mockery which amounts to a danger of alienation. Sooner than run the risks apparent in such nomenclature, it would be prudent to consider an alternative designation such as "Territorial Army Training Corps," or some similar term, the initials of which should not collide with those of cycling or cricket or other civilian institutions. The result of this would be that the Territorial Force might be enriched by the possession of specially well trained and highly valuable non-commissioned officers. Sir Edward Ward's committee dealt only with the officer question; but those who have experience of soldiering will agree that the question of N.C.O.'s is of equal importance; and if it be so in the Regular Army, *a fortiori* it must be so in the Auxiliary Forces—the first and second lines respectively of our Army of 1908. So far as the ordinary uniformed public-school cadet corps are concerned, there is nothing to be said in reference to the name and the purpose of the proposed corps. Events will determine whether a greater number of officers will join the Territorial Army than that which flowed to the Volunteer Force under the old *régime*; but the gain in definition of object and in the necessity of increased efficiency is valuable from every point of scholastic view.

While wisely maintaining the general internal organisation of the school corps and their freedom in detail of system, the proposals of the War Office committee were from the first considered to involve dissociation of the cadet corps from their parent battalions. Since the publication of the report of the committee, there have been from time to time official explanations as to the meaning and extent of such proposed dissociation; and the general feeling in the corps themselves seems to be in favour of the retention of names and associations. In certain respects this is a tolerably simple matter: many school cadet corps are, and many are not, indebted to their connection with a local or parent corps, while the association or relation between the cadets and the parent battalion has in very few cases been of any advantage whatever to the latter except by the occasional opportunity afforded for securing officers. If the proposals of the War Office committee indicated advantages to the cadets which would follow a severance from the battalion or regiment, then in the majority of cases it would be wrong to be governed by sentimental considerations. To a very small minority of corps, sappers and gunners, the loss would be tremendous through such dissociation; such corps are, however, so few in number as to be almost a negligible quantity, seeing that special regulations could easily be made in their case. It may be mentioned that the tendency of cadet engineer corps has been to turn into infantry; and the consideration of cadet artillery depends on the very dubious advisability as to the maintenance of a volunteer branch of so technical an arm of the service. Further, the inclusion of some part or parts of

military engineering in the general curriculum of all corps might well form a subject of careful investigation when the new scheme comes into force. But the whole matter of dissociation seems to be closely connected with that of the instruction.

In the proposed staff for the instruction and examination of school and university corps, the following arrangements are set forth in the report of the War Office committee—to wit, that there should be one Chief Instructor (graded as Colonel, General Staff at Headquarters), two Assistant Instructors (Lieutenant-Colonels or Majors of General Staff), six Deputy-Assistant Instructors, making a total of nine officers, whose duty it would be to attend to the 150 schools already attached to volunteer corps, together with the universities (which do not merely mean Oxford and Cambridge), and the 500, possibly 800, probably 100, schools which would join the Training Corps of the Territorial Army as ununiformed cadets. In view of these figures the surmise is justifiable that for the present at least there will be little or no dissociation of cadet corps from their parent volunteer battalions or regiments: nay, rather one would imagine that the Army Council, through the staff indicated above, would be likely to draw closer the bonds of union so far as instruction and military education are concerned on the part of adjutants and commanding officers of the volunteer battalions. Otherwise a far larger staff of headquarter examiners, instructors, and inspectors would be required than that contemplated in the proposals of the committee.

The curriculum proposed for the training of the cadets is admirable, and designed for the production of such efficiency as would be requisite for a second lieutenant of volunteers. A school certificate (cert. A) is to be granted to those who pass a written and practical examination in (i) drill, (ii) command in the field, (iii) musketry, (iv) certain parts of infantry and combined training, and (v) signalling (semaphore).

We live in an age not only of compromise but also of "alternative subjects"; and the possessor of this or that military hobby naturally would like to see his favourite pursuit assigned a place in the irreducible minimum of training. The mere sound of the words "certificate" and "examination" at once arouses the academic passion for substitutions. It is plain that no harm would come from the inclusion on a certificate of statements to the effect that the candidate had passed in Morse code, military engineering, or topography; and some cadets might even at that early stage anticipate one of their subsequent studies for later qualification, and be marked for passing in a knowledge of the history of the volunteer movement in England from the earliest times. But whatever might be the optional or additional subjects, the five essentials should satisfy the most voracious worker, involving as they do all the elements of the practical usefulness of the young soldier. Some points of difficulty necessarily arise. Efficiency in command in the field depends on attendance at field-days and camp, and under existing conditions both are impossible in a very large number of cases. For the field-day much can be done by the central organisation at headquarters to aid in gathering together various schools, and ensuring their participation in such exercises; while we may look to the County Associations to remove difficulties at present existing in the provision of suitable ground for the manœuvres.

Camp is a more serious obstacle. Not only the problem of ways and means, but also the exigencies of personal and family convenience complicate the enforcing of the obligation to attend. The provision of a small grant per man per day (the amount to be annexed by the corps, of course) would probably work wonders. Folk do not regard so much the money in volunteer service as the recognition that the work is held to be of financial value. If a parent, whether he be rich or poor, knows that his son by attending camp is drawing pay, earning something for himself or his corps, he will encourage the boy to attend, and will feel satisfaction that the work done is considered worth something to the country. Again, if attendance at camp be, as it should be, an obligatory condition of the granting of the certificate, it is clear that financial assistance to that end should be given universally.

Until the provision of range facilities becomes more general (and this should form one of the first objects of the energies of the County Associations) it is obvious that the qualifications of the musketry course must depend on circumstances. Here, again, the promulgation of the new scheme will be of great assistance to the schools, as more effort will be made to gratify those demands which are seen to be based on the needs of training. The settlement of proportion in the supply of serviceable and of D.P. rifles in the distribution of arms will depend on demands and powers of supply. For practical purposes experience has repeatedly shown that a small number of excellent rifles may suffice to train a large number of cadets in shooting; and if the question of expense arises in respect of the supply of arms, the money saved by the provision of few, rather than many, good weapons might well be expended in other directions. The miniature range and the subtarget machine must be of greater or less importance in the musketry course according as range facilities are plentiful or otherwise.

The committee of the War Office in its report issued in February, 1907, undoubtedly contemplated the age of fifteen as the minimum for qualification for State aid in the form of camp allowance for "efficients." The decision of the House of Commons in June, that no financial aid should be given in respect of boys under the age of sixteen, effectually cuts out not only the chance of this allowance, but also the opportunities of a large number of boys for earning the £3 grant in consideration of the cert. A. Apart from the opinion of many educational authorities that the average age of boys on leaving English schools is on the decline, one may say with certainty that

in schools which possess or might possess ununiformed cadet corps, the tendency is for boys to leave before the age of sixteen; and for this reason alone it is to be feared that very few of such schools will find it worth their while to join the new force for the purposes of obtaining financial aid, though it would appear that there is nothing to prevent them from availing themselves of grants of arms and ammunition and of the instruction arrangements of the headquarter staff. If this prove to be the case, it is most important that the contribution of service by these numerous units be not discouraged through any lack of such recognition as it may be in the power of the Army Council to give, by grant of certificates and other means to secure, if not officers, at any rate good N.C.O.'s.

In respect of finances, existing cadet corps need be under no apprehension as to the immediate future. Those who have been in receipt of Government grants for efficient enrolled men will continue to draw for two years the average amount earned during the past three years under the old system. Those who have not availed themselves of such sources of revenue will find a welcome addition to their income in grants for cert. A and for efficients.

In order to obtain these grants, more time and serious effort will have to be expended on the corps work of schools. The opposition between the interests of class-room, playing-fields, and parade-ground will give way to the necessities of the military situation. Hours will have to be found for the training corps which could not before be allotted to the cadet corps. It may be that cert. A will become an asset in the Woolwich and Sandhurst examinations; probably schools will vie with one another in respect of the number of certificates annually obtained, as they do in other forms of scholastic distinction. The commanding officer of the school corps will have a harder time than ever, and so will the headmaster. The schools will derive greater benefits than before from the condition of their military organisations; but whether or not a proportionate and direct profit will accrue to the military resources of the country, time alone will show.

ON CORPORAL PUNISHMENT.

By A Headmaster.

I.

THE traditional representation of a schoolmaster is one which shows a fierce gowned figure with a book in one hand and a cane in the other; as the warrior is depicted carrying a sword, so the schoolmaster is presented carrying a cane or birch! If we may believe half the tales handed down to us by our ancestors, the popular notion of our profession was very well founded, and an amount of brutality was prevalent which in these days we should consider almost incredible; for a great change has gradually taken place in the methods of treating boys, and corporal punishment has—at any rate in secondary schools—greatly diminished; a feeling of comradeship has been established between masters and boys, which is partly the result and partly the justification of the milder *régime*, and it may safely be said that no return to the methods of former days is ever likely to take place. There are those who contend that corporal punishment should never be resorted to in any circumstances, while most of those who are in favour of its retention would only use it with reluctance, and would endeavour to avoid the necessity for it. The present article is an attempt by one who has had long experience as an assistant-master in a school where the assistant-masters used the cane, followed by further experience as a headmaster, to indicate some reasons why it would be unwise to abolish the punishment altogether; but it must be understood that what follows is written solely with reference to boys' schools; as to the desirability of corporal punishment in any other department of life the writer expresses no opinion.

We may perhaps begin with a few words respecting the objections commonly urged against this form of punishment, and of these the most familiar is that it is "degrading"; this epithet is freely applied, and is held to dispose of the question altogether. And, indeed, it would dispose of it very effectually if it were true—but it is in reality merely a question-begging epithet which will not bear examination, and ought never to be used by those who have had no actual experience of the effects of corporal punishment. Those who have had such experience know well enough that it does not "degrade" the boy who suffers it—he is as good afterwards as before, and probably a great deal better—and it does not "degrade" the master who inflicts it. Let it be said at once that if it is *unjust* or administered otherwise than judicially it *does* degrade the master; but abuses of the system must not be held to condemn the system itself, and it is quite certain that the just infliction of the punishment does not degrade.

It is sometimes said that it "hardens the offender"; possibly this effect may have resulted when it has been resorted to injudiciously, and without certain precautions which are indicated below, but it is not the usual effect, and we believe never would be the effect, if such precautions were taken. Then, again, we hear that it is "unnecessary," that "moral suasion is better," and that it will be "unknown a hundred years hence." It is really difficult to listen to such "arguments" with patience; of course it is "unnecessary"; we could do without it, and so could we do without most things; but the point is, does it do more harm than good, or more good than harm? Its retention must be decided on that ground, and not on the ground of mere necessity.

"Moral suasion is better"—yes, of course moral suasion is better; but the things are not alternatives; and it is one of the chief merits

of corporal punishment that it is so easily combined with moral suasion, making the latter effective in cases where, without such punishment, it would fail.

As for the "hundred years hence" argument, it is sufficient to hazard the prediction that a hundred years hence we may also be without horse-buses, black fogs, bull-fights, and so on—statements which are equally probable and equally irrelevant; if the schoolmasters of a hundred years on find that things go better on the whole without corporal punishment, of course they will discard it. *We* have to do with boys as they are now, and need not stop to consider what they will be a hundred years hence.

It is, however, not sufficient to show that the common arguments against corporal punishment are fallacious; an attempt must be made to consider what is actually to be said in its favour. First, then, it may safely be said that as a deterrent it has no equal; it is an unmistakably real punishment, which appeals to everyone; when the cane is in prospect, there will not often be any question in a boy's mind as to whether a certain course is "worth while," and the more certain he thinks the cane to be, the less likely will he be to do anything which will deserve it. A well-known headmaster once said to the present writer, "I never hesitate to cane a boy, and the consequence is that I scarcely ever have to do so," and it is undoubtedly true that in this respect, as in so many others, the strict discipline is, in the long run, the kindest. Even the efficacy of minor punishments is enhanced, for any boy would be anxious to avoid the "ultimate penalty," and would so give more heed to a mere imposition than he would otherwise do. Thus, paradoxical as it may seem, the fact of the cane being available, if thoroughly realised by the boys, tends to reduce the amount of punishment that may be necessary.

There is, therefore, a cogent argument for corporal punishment on the ground that it is for the public good; but this is not sufficient—there remains the question of at least equal importance: "Is it for the good of the individual boy?" And to this question also it would appear that an affirmative reply must be made. The fact that it is a very real punishment, greatly disliked and feared, not only makes it deterrent but brings home to the offender, as no other punishment does, the stern *necessity* for abandoning his evil ways. There are very few boys who get caned more than once, or twice at the most, for the same offence; in cases where the second punishment fails to produce permanent amendment it will nearly always be found that the offence has become a *habit*, and then we must admit that probably several canings will be necessary; but the choice then is between continued severity and the non-eradication of the habit, and there ought to be no hesitation as to which is the right course. The fact is that where all other methods fail, the cane frequently succeeds, and is very likely to succeed at once, and this alone justifies its inclusion amongst the list of punishments available for the schoolmaster's use.

The above may, perhaps, be regarded as the stock arguments in favour of corporal punishment; they are such as would readily occur to anyone who, without scholastic experience, sat down and thought the matter over. But there are others of very great importance, which would scarcely suggest themselves to any but those who have had long experience, and which, indeed, are not in accordance with what would be expected beforehand; for this reason they are somewhat difficult to bring home to the lay reader, but he may rest assured that a very large number of the most experienced schoolmasters would confirm what is now to follow.

First, then, corporal punishment facilitates moral suasion; as indicated earlier in this article, it is absurd to regard these two things as alternatives; the success of moral suasion depends largely on the personality of the persuader, and some of us are better at it than others; but probably no one would claim to be always successful—sometimes the boy goes away very little impressed, or the impression, if real, is very short-lived. In such a case the moral suasion would probably have been much more effectual if accompanied by chastisement, and this is specially true in regard to a second or third repetition of an offence. The "good talking-to," which is so often taken to heart by a good boy, after a temporary lapse, becomes rather cheap when it is repeated several times (albeit with variations) to a seasoned offender; but after a good hiding he would lend a more heedful ear to the exhortations of his master, and permanent good would be more likely to result.

Of course, it must not for a moment be supposed that the writer advocates the cane simply in order to enforce attention to his lecturing; there may be cases where precisely the opposite result would follow; but this does not alter the fact that there are also many cases in which corporal punishment is a most effective aid to moral suasion.

Another advantage possessed by this punishment, as contrasted with other severe punishments, such as suspension, degradation, signing black books, and so on, is that it does not necessarily carry any disgrace with it. We reach here a point on which there is certainly great divergence of opinion; some schoolmasters, particularly in day schools, would probably take the opposite view, and say that a caning should be regarded as a disgrace, and that this feeling ought to be deliberately fostered by the masters. The present writer ventures to dissent very strongly from this opinion, and to maintain that disgrace should be as far as possible dissociated from the punishment; of course, if a boy is thrashed for some offence which revolts the moral sense of his schoolfellows—*e.g.*, cheating—it is natural and right that he should be regarded as in disgrace, but this would be due to the offence itself, not to the thrashing, and would be equally the case

if he had been punished with equal severity in some other way. To regard a boy as in disgrace, to hold him up to opprobrium in the eyes of his fellows, simply because he has been caned appears to the writer to be a very serious mistake, tending to destroy the self-respect which we schoolmasters ought to encourage in every way. Of course, it is unnecessary to say that the other extreme, in which the culprit is regarded by himself and his schoolfellows as a hero, is equally bad, though it is a state of affairs which in some schools is by no means uncommon; it is probable that public opinion on this subject often needs some guidance.

We pass now to another consideration which would not, *a priori*, be regarded as true, namely, that corporal punishment does not provoke feelings of hostility or resentment. It is here, perhaps, desirable to emphasise (what, however, is assumed throughout) that the punishment is felt to be deserved; this being granted, it will be found that, though long impositions and (to a still greater degree) a constant succession of petty punishments are apt to irritate the temper and provoke ill-feeling, no such result follows the use of the cane. This, of course, must be a matter of opinion, and it may be argued that boys really resent the punishment, but take good care to conceal their resentment for fear of consequences; but to those who have noted how often the relations between masters and boys are actually improved, and a far more friendly feeling established after a caning, such an explanation will be quite incredible.

It has been stated, whether truly or untruly, that in Germany it is a common custom to require a child, after he has been caned, to say "thank you"; such a proceeding would appear revolting to most Englishmen, and conducive to insincerity and hyprocrisy. But it is by no means uncommon to find boys spontaneously conveying approval of their punishment—seldom by "thanks"—which might be held to savour of humbug or a craven spirit—but in other ways which admit of no mistake; such a remark as "It will teach me not to do such a thing again," or "It would have been better for me if I had had it sooner," tells its own tale. The fact is, the boys understand it—they know it is not done for their master's amusement—they are good sportsmen who recognise it as "part of the game"—they have seen the good it does to others, and are at least willing to think it will do good to them, however hateful it may be to endure.

It should be said, however, that this advantage exists only when boys are left to what may be called their own natural opinions; if the parent informs the boy that chastisement is "degrading," the boy will so regard it, and will strongly resent it; and many cases could be mentioned in which a boy has taken his thrashing well, and has shown a good spirit over it, but has entirely changed his attitude, hours or perhaps days *after* the event, owing to the pressure of home influences.

MEDICAL INSPECTION—AND AFTER.

THE interest excited by the memorandum on the medical inspection of the children in elementary schools, lately issued by the Board of Education, will have been accompanied by some misgivings in the minds of those who read it with attention. The Act, which entails upon both the Board and the local education authorities large responsibilities, came into operation on January 1st, 1908. Its terms afford to these bodies no guidance as to the methods they are to pursue in carrying out the duties imposed on them. In the preliminary circular, now issued over Sir Robert Morant's name, the Board gives a rather hazy but sufficiently suggestive sketch of what these duties imply, and formulates some of the general directions which, it holds, must be observed for their fulfilment; but while specifying the ends which are to be kept in view, it leaves the devising of methods to the local authorities themselves—and asks them to proffer suggestions on the results of their several experiments.

No one with an elementary knowledge of the subject could suppose that the medical inspection of school children, if it stood by itself, would be anything but a barren statistical farce. Its avowed object was to provide a means of detecting weak points in order that effectual measures should be taken for correcting and avoiding them. To inspect and classify all the children in all the primary schools must cost time, labour, and money. To deal with the physical and mental defects thus made patent, and to undertake the relatively gigantic task of correcting those evils and anomalies in the social life of the nation from which these defects arise, must prove a still more difficult and costly business. We are on the side of those who firmly believe that a scheme wisely designed and carried out to this end will amply justify itself in virtue of the economic results which it would eventually secure. But it is no less certain that, since expenditure on a scale relatively heavy can hardly be avoided, careful economy must be secured by methods combining as far as possible simplicity, directness, and efficiency. Whether such results will follow the course now proposed by the Board of Education appears to be open to question, upon some important points at least.

The local authorities are instructed that the work of medical inspection is to be carried out by them "under the direct supervision of the medical officer of health," who is to be provided with a staff of assistants, should this be found necessary. Now the medical officer of health is primarily responsible to the Local Government Board, and not to the Board of Education, to begin with. He and the school medical officer are each, at their best, experts specialised in somewhat different directions. We do not believe that there should necessarily be any want of harmony between them in their several efforts for the common good. But in the event of a difference of opinion arising between the health officer of the

local authority and the medical department of the Board of Education—to whose advice the local authority is entitled—how is a decision to be arrived at? And is such imperfect control likely to give rise to no friction between the two great departments whose servants would, in such a case, be made to occupy no very enviable position?

Again, a medical officer of health holds his appointment, not directly from the department which he serves, and on no fixity of tenure, but at the pleasure of the local authority by whom he is elected for a short period of years. It is notorious that there are not a few districts in which the probability of his re-election is in inverse ratio to the amount of zeal and activity which he has displayed in discharging the duties of his position. By what means will the Board of Education stimulate or coerce the local authority which, through ignorance or stubbornness, stifles the devoted efforts of its health officer—who is directly responsible to another department. The method thus enforced upon the local authorities cannot pretend to attain that "unification of the public health services" which it blithely professes to ensure. Similarly, it seems only a weak shirking of responsibility to place upon the local authority the duty of evolving for themselves "the administrative machinery necessary for the appropriate working out, in various localities, of these and allied questions" on the plea that this "shall be the outcome of real organic growth rather than of a hasty attempt to impose one mechanical system upon all districts." Without encouraging "hasty attempts," the Board of Education might have been expected to remember that the most vigorous "organic growth" produces results which are good and acceptable in proportion as intelligent guidance and training are brought to bear in the earlier stages of existence.

At present our public health service occupies an anomalous position which cramps its efficiency and entails waste of both energy and money. It must do so until it is reorganised under a responsible Minister of Public Health. Such a department might be co-ordinated with that of education. And, indeed, since national progress in hygiene presupposes the spread of education, and since ideal education is impossible without due attention to health, it would—under ideal conditions—be of no moment whether one department or the other were nominally subordinate to its fellow, so long as effective collaboration were provided for and secured.

The Act in question refers only to the medical inspection of children attending primary schools. But it is satisfactory to learn from the memorandum that the Board is urging the necessity of giving special instruction in the principles of hygiene to all students in every type of training college, so that they may be able to deal profitably with this subject in the schools. The experience already gained, in the Scottish training colleges especially, proves what excellent results are attainable in this direction; and their value will be only more clearly exemplified as the new Act comes to be put into operation.

Secondary schools are exempt from the operation of the Act. Yet if good results are expected from a health census of a part of our school children, even better might be looked for, did it embrace all children of school age. In the secondary schools the work would be carried out more easily, with less labour and at less expense; and the outcome, in some ways at all events, would be no less valuable. It might reveal results equally unexpected and stimulating: it could hardly fail to throw instructive sidelights upon associated problems which are still obscure. It would furnish the complementary information needed for compiling a complete balance sheet of national income and expenditure for a time of life when it is not too early to detect weak points in social administration, nor too late for applying measures of improvement. The spirit which should make possible the beginning of such a record on a voluntary basis has been already, to some extent, evoked, and it does not seem too soon to endeavour to make practical use of it.

We would suggest that the Board should make an appeal, to all boarding schools at all events, for voluntary returns of the results of a simple form of medical inspection of their pupils, in accordance with a specified schedule, so as to secure uniformity and favour the comparison of statistical results. The schedules might be supplied by the Board, in duplicate, to each school—one form being returned when its annual entries of new pupils had been completed, the other being retained by the school authority. At triennial intervals each previous schedule would be sent back by the Board to the school in order to have entered against his or her initials or number the essential records pertaining to this later period of the pupil's life; the schedule to be then again returned to the Board—similar entries being of course made in the duplicate schedule retained by the school. The information thus obtained with regard to the physical state and progress of each pupil would form a record most valuable to the school, to its medical officer, to the family physician; and at the same time could not fail to contribute greatly towards eventually furnishing the material for something like a complete survey of the groundwork of the national physique at any given period, enabling us to gauge with some approach to accuracy the indications of national progress, and to detect the earliest warnings of deterioration.

The Sculpture of the West. By Hans Stegmann. viii + 162 pp. (Dent. The Temple Primers.) 1s. net.—Here we have a compendium of sculpture from Greece to modern times in Europe. In such a small book on so wide a subject we must be satisfied if the main lines of development are clearly stated, with a few typical examples; this the author has done. But the illustrations are not nearly enough for one who does not know the subject. The book is suited for one who already knows a good deal and wants to see his knowledge correlated.

COMMERCIAL GEOGRAPHY FOR SCHOOLS.

By E. R. WETHEY, M.A., F.R.G.S.
Bradford Grammar School, Lecturer in Commercial Geography to the West Riding County Council.

SCHOOL "Commercial Geography" is a subject which usually evokes a certain amount of discussion amongst geographers in general and teachers in particular. What *is* commercial geography? Should it be taught in schools at all? Is it an educative subject? If taught, should it be a means of correlating facts and principles already learnt by the pupils, or should it be regarded as a separate subject, standing, so to say, on its own base? At what age should it be taken up? In what class of schools? These are some of the questions which I propose to answer in the small space at my disposal.

A good deal of misapprehension exists as to what commercial geography really is. The best account I have seen of late is contained in one of the prefatory notices in Bartholomew's new "Atlas of the World's Commerce" (Newnes), to which those interested in the matter may be referred. Mr. G. G. Chisholm, whose authority on the subject will be undisputed, there makes it clear first what is meant by the study of geography, and how essential it is to mark it off from the study of geology and other kindred sciences, and then sums up his description of "Economic Geography" as a subject which embraces all geographical conditions affecting the production, transport, and exchange of commodities. "All geographical conditions"—therefore imports and exports *by themselves* are not commercial geography; nor are statistics, nor market-prices, nor tariffs, bounties, and drawbacks; they enter into the subject, but as consequences following causes, and the causes (where they are geographical) are to be considered, if commercial geography is to be taught. The subject is, therefore, thoroughly educative. And that it is correlated with the other facts and principles of geography let me adduce another first-class witness, Dr. H. R. Mill. In his "International Geography" (chapter i.) he likens the departments of geography to a pyramid, "broad-based on the smooth hewn blocks of mathematics, rising through tiers of firmly laid stones from the quarries of the physical sciences, and the less sure products of biology and anthropology, to the irregular courses of political geography, and the rubble heap of commercial geography which caps, if it does not crown, the edifice," *i.e.*, to understand the facts of commercial geography the principles of the other branches of geography must be understood. In Fig. 1 I have applied this idea of the "pyramid" to the geography of a country, and have endeavoured to show that the physical and political geography of Germany must be studied as bases responsible for the questions of production, transport, and markets, which go to make up its commercial geography.

Of all these bases physical geography is the most important. The very first item in a lecture on the commercial geography of a country should be the display of a physical map with a view to the explanation of the nature and trend of commerce and trade. Examples to the point will readily occur: the "Fall-line" of the Eastern United States, the great plain of Russia, the plateau and mountains of Switzerland, the diagonal furrow of Turkey-in-Europe, the Nile delta of Egypt, the rapids of African rivers are some of them. How can one teach the railway communications between east and west in the north of England better than by reference to the disposition of highlands and lowlands, which has determined the course of those railways? Or, again, the position and importance of what Mr. Chamberlain well called our "Developable Imperial Estates" in Tropical Africa better than by a similar reference?

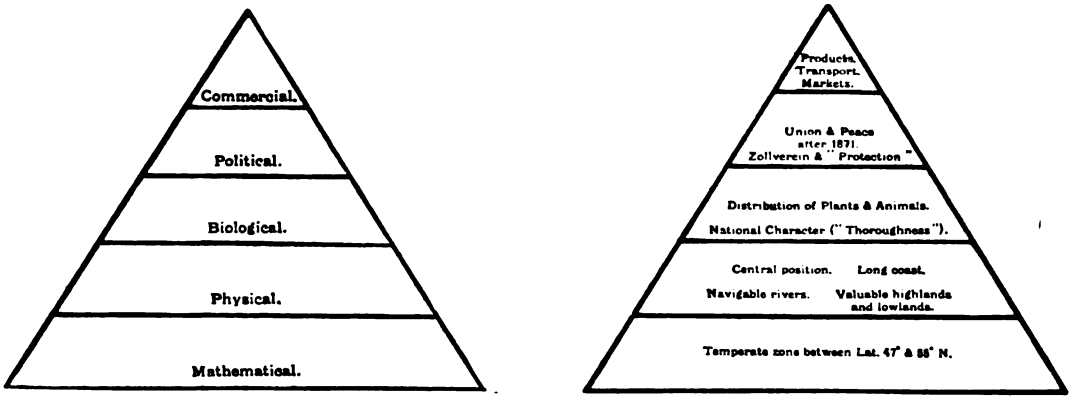

FIG. 1.—Mill's Geographical Pyramid applied to Germany.

Here are two illustrations to the point. Fig. 2 shows the so-called "Pennine Chain"—very far, indeed, from being a true mountain chain. Fig. 3 shows the railways from east to west in the north of England. Both figures cover the same area of land and are drawn to the same scale. The connection of cause and consequence is obvious. The teacher may use either figure on the blackboard, and deduce the facts of the one from the facts of the other—or, better, lead his class to perform the exercise. The flow of question and

answer should be easy, and the subsequent diagrams and annotations in the note-books interesting. A "Tyne Gap" and an "Aire Gap"

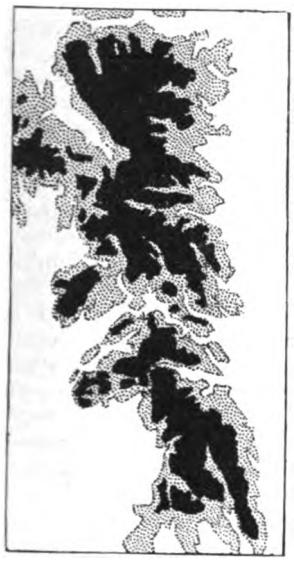

FIG. 2.—The Pennines.
Land above 1,000 ft.
Land between 500 and 1,000 ft.
Scale 1: 3,000,000, or 48 English miles to 1 inch.

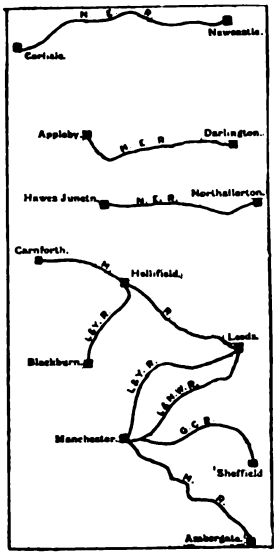

FIG. 3.—The chief railways crossing the Pennines.

put this way at once assume concrete shape, and the value of geography is apparent. Incidentally, the class is learning *commercial* geography.

within the Tropics. Fig. 5 shows the British possessions in Africa. The coincidence between the two figures is remarkable. It explains—amongst other items—why it is that France and Germany are occasionally bitter on the score of British land-grabbing propensities—land-grabbing, moreover, of the choicest spots of available territory. There is very little else worth having in Africa! A form of British boys soon enters into the spirit of such a "partition" of Africa, and in a flash takes in the full force of the expression "*Developable* Imperial Estates." Again, incidentally, they are learning commercial geography.

And here is the whole point—for schools. I do not believe that commercial geography, or economic geography, as such—*i.e.*, as a set subject—is suitable for boys and girls. I will even quote a portion of one well-known syllabus, which may be said to bear its own condemnation (for schools) on its face.

> The course should embrace [it recommends] the study of the localities where, and the geographical and local conditions under which, the various commodities are produced; the means of transit, and the trade routes available, both inland and for export, together with the distances and ordinary modes of conveyance to important markets, the quantities available for export, and the actual recent rates of export to various countries; neutral markets and extent of British trade with them; the quantities in demand as imports, and the extent to which this demand is met by various foreign countries; the capacities of countries for commercial development, including both old and new countries; weights and measures, currencies, tariffs, postal and telegraph arrangements, and social and political characteristics likely to affect trade; ports and harbours, lighthouses and lightships, coaling stations.

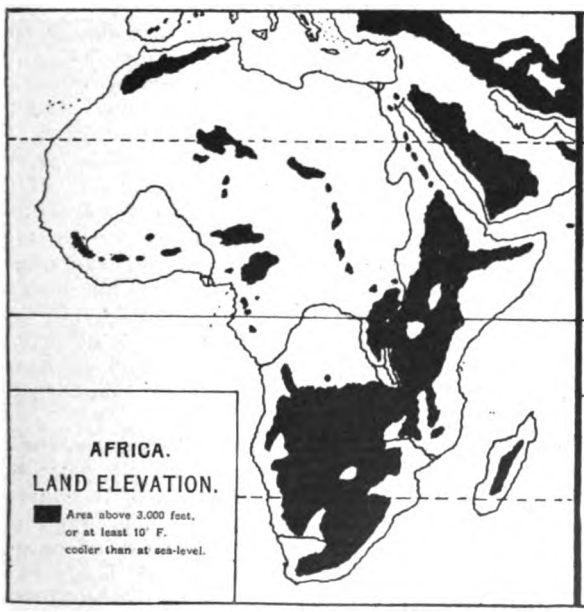

FIG. 4.

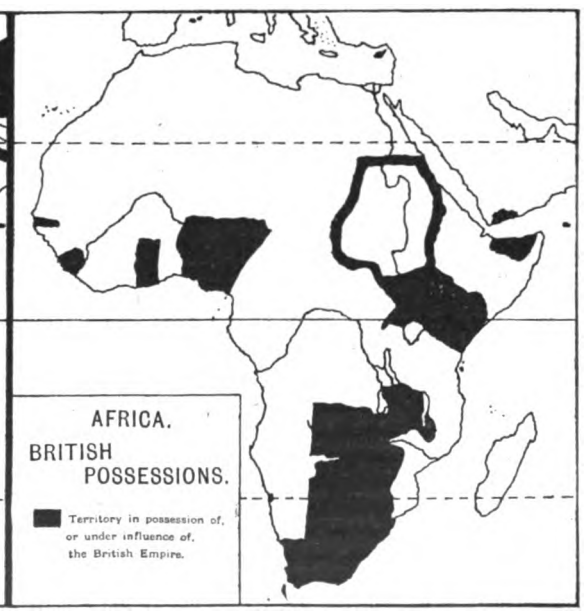

FIG. 5.

Fig. 4 shows the area over 3,000 feet above sea-level in Africa, *i.e.*, that elevation which is at least necessary for the working existence of Europeans in a continent, two-thirds of which lie

This is altogether too "stiff," too economic—for

schools. On the other hand, no man worth his salt as a teacher nowadays will teach geography without introducing, or rather leading up to, the "human" note. If he and his class are on the subject of a country's mountains, it will be the passes, rather than the peaks, to which he will direct attention; if on the rivers, their usefulness to man rather than their lengths; if on the towns, their causes of growth and chances of future development rather than the bare mention of their existence; if on statistics, their relative rather than their absolute values. This is commercial geography by *implication*, and in my opinion is the only commercial geography for schools. It can and ought to be introduced into all parts of the school—more emphatically, perhaps, amongst the seniors than the juniors; Mr. Mackinder's latest book, "Our Own Islands," for quite young children, is full of commercial geography by implication. And such geography is invaluable; it is explanatory, it is evolutional, it is educational.

For adults in evening classes the case is different, though even here it is futile and foolish to attempt to teach commercial geography without a reference to the first principles of physical geography. The difficulty is—*crede experto*—that in the case of many adults either their early geography has been neglected, or they have been taught on wrong lines in their school days, with the natural result that they have forgotten the few "principles" they ever knew.

SCANDINAVIAN SCHOOLS.[1]

THE seventeenth volume in the series of special reports made to the English Board of Education has a greater degree of unity as regards subject-matter than most of its predecessors, and than all of them as regards authorship. The entire volume is the work of Mr. J. S. Thornton, who is well known as the writer of many notes and articles on education in northern lands. His qualifications are "experience as a teacher both in private and in public secondary schools in England," and a long and intimate acquaintance with Scandinavian schools. In a short preface three points are singled out as being of special interest to English readers:

> Besides the hearty co-operation of public and private effort which marks the systems of Norway, Sweden, and Denmark, a co-operation which has no doubt been encouraged by the heavy pressure of modern educational needs upon the financial resources of the State, the establishment of one standard of examination for the pupils of all secondary schools, whether public or private, is of great interest in connection with the recent report of the Consultative Committee of the Board of Education upon a School Leaving Examination. The third matter which has some direct bearing upon our own problems is the method adopted over thirty years ago in Sweden of training secondary-school teachers under the headmasters of selected secondary schools, a plan which has just been followed in Norway and Denmark also.

The said hearty co-operation is emphasised throughout the body of the report, not only as regards "public and private effort," but also as regards primary- and secondary-school teachers, and as regards all ranks of the scholastic profession throughout the four countries treated—Finland, in virtue of its strong Swedish element, being included, as usual, with the three kingdoms to its west. There can be no doubt of the reality and the utility of this co-operation; but yet it may be pointed out that there are limits to its heartiness. The dissolution of the Swedo-Norwegian Union two years ago, coupled with the attitude of the Danes at the time and since, may have had a stimulating effect in each of the countries concerned, but it has in many cases checked or even obliterated the desire of co-operation: pleasant things were said in the English papers at the time about the dignity, restraint, amiability, and good sense displayed, but there has been, and is, a great deal of bitterness beneath the surface—and not least among the teachers. Then, again, the fact that women teachers in primary schools (which are worked by the State) are far better paid than those in secondary schools (which are only subsidised by the State) causes a considerable amount of jealousy between these two classes—at least in Sweden. Finally, in Sweden at least, the invigorating emulation between "public and private effort"—upon which Mr. Thornton justly insists—is not unaccompanied by little jars. Several apt illustrations of this struck the present writer as he was slowly sipping Mr. Thornton's report. On one occasion, when a group of teachers were discussing the best books for the study of English, one of them (a teacher in a State school) remarked shockedly "how extraordinary it was" that the two chief authors of text-books in English for Swedish schools were "only teachers in private schools." And on several occasions one of the said "chief authors" unconsciously accounted for this extraordinary fact in precisely the same way as Mr. Thornton's report would lead one to expect—namely, by denouncing the bureaucracy of the State schools. It is, by the way, a little surprising that in his many eulogies of private effort in Sweden, he has not mentioned the boarding school on the English model at Lundsberg in Värmland.

As regards "the establishment of one standard of examination for the pupils of all secondary schools," Mr. Thornton's accounts of the various ways in which this one standard is fixed and tested in the different countries is full of suggestions for our examination-haunted land. One result of the simplicity is that the parents understand what the standard is, and do not live in that dazed state of misapprehension and ignorance about the work of their boys and girls that is so common in the English (and Irish) parent. Yet even here there appears to be a fly in the amber: it is said that the parents, in their eagerness that

1 "Schools Public and Private in the North of Europe," being vol. xvii. of Special Reports on Educational Subjects." viii+136 pp. (Wyman and Sons.) 8*d*.

their progeny should not be beaten by that of their neighbours, are apt to join the teachers in overworking their young folk—especially girls.

The matter of training "secondary-school teachers under the headmasters of selected secondary schools" forms the subject of some of Mr. Thornton's most interesting pages (especially the extract from the Danish official report on the Swedish system, p. 21), which contain several points not given in the Swedish probationer's article[1] on the subject which appeared in these columns two years ago.

Last, but not least, Mr. Thornton devotes nearly a fifth of his space to a very fascinating account of the people's high schools in the countries described—a movement in which Denmark had the honour of leading the way. Mr. Thornton here shows, with an admirable critical enthusiasm, how the conflict between "bread and butter" subjects, between public and private effort, has been and can be used to produce social benefits which many people would like to see attained in our own country.

A BATCH OF READERS.[2]

WHATEVER may have been the case in the past, there is certainly no longer any excuse for admitting to the schoolroom readers that have no right to be called literature. The schoolmaster's only difficulty now is the difficulty of choosing between the innumerable good things that are offered by competing editors and publishers.

Miss C. L. Thomson's name (1) is a guarantee of good taste and sound work. Her new readers are fresh and varied. Prose and poetry are happily mingled, and the prose selections are long enough to encourage continuous reading.

"The Water Babies" (2) is a classic that is improved rather than spoilt by judicious abridgment, and Miss Ella Thomson has done her work well.

"The Dale Readers" (3) for young children have the great advantage of charming pictures by Mr. Walter Crane, besides ingenious devices for the teaching of spelling.

Three little volumes of Longfellow's poems (4) are a welcome sign that a poet admirably suited to childhood is coming to his own again in our schools. Messrs. Dent's "Evangeline" is as pretty as it is cheap. "The Hiawatha Primer" tells the story of Hiawatha in very simple prose for young children; they are just given a taste of the poetry in an occasional extract. The pictures are charming. We like them better than the realistic photographs in the "Riverside" edition of the same publishers, which destroy the imaginative atmosphere that should surround a poem. But teachers will be interested in Miss Longfellow's account of her visit to Hiawatha's people, and in the directions for the pronunciation of Indian names.

The "Quentin Durward" (5) from the Pitt Press, and "Old Mortality" from Messrs. Dent, are nicely printed editions with glossaries and introductions that are competent and sufficient without being elaborate. "With numerous illustrations" on Messrs. Dent's title-page seems a little misleading, as the illustrations—excellent as far as they go—are confined to the introduction and notes.

[1] This article was entitled "The Scholastic Career in Sweden," and appeared in THE SCHOOL WORLD for June, 1905.

[2] (1) "New English Reading Books." Edited by C. L. Thomson. Book I., Fairy Tales. 159 pp. 1s. Book II., Nature Myths. 180 pp. 1s. Book III., Stories of the Sea. 200 pp. 1s. 3d. Book IV., Heroic Tales. 222 pp. 1s. 6d. (Marshall.)

(2) "The Water-Babies." By Charles Kingsley. Abridged and adapted as a class reading book by Ella Thomson. 154 pp. (Marshall.) 1s.

(3) "The Dale Readers." Book II. Written by Nellie Dale, with new pictures by Walter Crane. 111 pp. (Philip.) 1s. 3d.

(4) "Longfellow's Song of Hiawatha." With Illustrations, Notes, and a Vocabulary. Riverside Literature Series. xii+193 pp. (Harrap.) 1s. 6d.

"The Hiawatha Primer." By Florence Holbrook. 148 pp. (Harrap.) 1s. 6d.

"Evangeline." By H. W. Longfellow. Temple English Literature Series for Schools. 63 pp. (Dent.) 6d. net.

(5) "Quentin Durward." By Sir W. Scott. Edited by W. Murison. xxii+573 pp. (Pitt Press.) 2s. 6d.

"Old Mortality." By Sir W. Scott. Edited by A. J. Grieve. xxii+462 pp. (Dent.) 1s. 4d.

THE COMEDIES OF ARISTOPHANES.[1]

IN the "Plutus" Mr. Rogers has not so good a scope for his remarkable talent as in the earlier plays: there is no chorus, and in the rendering of lyrics he is at his best. The nearest approach to lyric are the anapaests, and here we see the usual happy command of rime, the familiar zest, and generally the old easy rhythm. The whole version is full of fun and enjoyment, carries us along, and reproduces better than any we know the effect of the original. In the introduction the editor deals with the question whether this is the first or the second edition of the "Plutus," and he concludes that it is the second. He would lay the scene at Epidaurus, wrongly, we think, but he is right in assuming that the method of procedure was much the same in both, so that the Epidaurian inscriptions are available in illustration of the text of Aristophanes. The notes, critical and explanatory, are marked with the same sound common sense and the same humour as of old. Mr. Rogers is above all a literary interpreter, and therefore his edition is especially valuable now, at a time when the tendency of classical study has became unduly scholastic. We may conclude with a specimen of each translation: from the "Plutus" we take lines 489–497, where Chremylus gives the idea underlying the play.

Ch. All people with me, I am sure, will agree, for to all men alike it is clear,
That the honest and true should enjoy, as their due, a successful and happy career,
Whilst the lot of the godless and wicked should fall in exactly the opposite sphere.
'Twas to compass this end that myself and my friend have been thinking as hard as we can,
And have hit on a nice beneficial device, a truly magnificent plan.

[1] "The Comedies of Aristophanes." Edited, translated, and explained by B. B. Rogers. Vol. vi. (without Index), the "Plutus," to which is added, as a specimen of the New Comedy, a Translation of the "Menaechmi" of Plautus. xxxii+210 pp. (Bell.) 8s. 6d.

For if Wealth should attain to his eyesight again, nor amongst us so aimlessly roam,
To the dwellings I know of the good he would go, nor ever depart from their home.
The unjust and profane with disgust and disdain he is certain thereafter to shun,
Till all shall be honest and wealthy at last, to virtue and opulence won.

From the "Menaechmi" take the speech of the parasite, Peniculus, act iii., scene i.

Pen. More than thirty years I've lived, and never before in all that time
Chanced to make so vile a mistake as I've made to-day; I call it a crime.
Into a public meeting I plunge, intent to hear what the speakers say;
There I gape like a fool, the while Menaechmus quietly steals away.
He, I trow, to his love would go, nor wanted me there to join their eating.
Gods! I pray that in wrath ye slay the dolt who invented a public meeting,
Wasting the time of the busiest men who cannot afford their time to lose.
The idle crew with nothing to do we ought for a duty like that to choose;
Then if they fail to appear when summoned let them be fined without delay.
Plenty of men can, I guess, be found who eat but a single meal a day,
Don't invite, and are never invited. What in the world have *they* to do?
They are the folk to attend all meetings, and all our civic assemblies too.
Then I never had lost to-day the splendid dinner I had in view.
Sure as I live, 'twas the will of the gods that I this bit of ill-luck should find!
Still, perhaps, I may get some scraps; that hope a little consoles my mind.
Eh, but here is Menaechmus leaving! out he comes with a coronal on.
This is a cheerful time to arrive when all the dinner is over and done.

THE MOST NOTABLE SCHOOL BOOKS OF 1907.

The following short lists of important school books published during last year have been prepared to assist teachers anxious to acquaint themselves with recent books in the chief subjects of the secondary-school curriculum likely to be of use in their work. The compilation of the lists has been entrusted to experts familiar with the needs of schools. Attention has not been confined to books reviewed in these columns, and in one or two cases books published at the end of 1906, and not included in the lists of January last, have been mentioned.

A few explanatory notes intended to indicate the character of the volumes have in many cases been supplied.

Modern Languages.

"The Oxford Book of French Verse." Chosen and edited by St. John Lucas. (Oxford University Press.) 6*s.*

An excellent selection, well printed. Would make a very good school prize.

Molière, "Les Femmes Savantes." Edited by Frederic Spencer. (Dent.) 1*s.* 6*d.*

An ideal edition by just the right editor.

E. Huguet, "Petit Glossaire des Classiques français du XVII^e^ Siècle, contenant les mots et locutions qui ont vieilli ou dont le sens s'est modifié." (Hachette.) 4*s.* 2*d.*

A useful book of reference.

F. Brunot, "Histoire de la Langue française." Tome II: Le XVI^e^ Siècle. (Paris: Colin.) 15 francs.

A desirable addition to the reference library.

J. W. Adamson, "The Practice of Instruction." (National Society's Depository.) 4*s.* 6*d.*

The valuable chapter on modern language teaching is contributed by Mr. W. Mansfield Poole.

M. Walter, "Aneignung und Verarbeitung des Wortschatzes im neusprachlichen Unterricht." (Marburg: Elwert.) 10*d.*

A very valuable contribution to method.

A. Philibert and A. Pratt, "Free Composition and Essay-writing in French." (Dent.) 1*s.* 4*d.*

The standard is that of London Matriculation or the Oxford or Cambridge Higher Locals.

D. Jones, "Cent Poésies Enfantines, recueillies et mises en transcription phonétique." (Leipzig: Teubner.) 1*s.* 10*d.*

A good selection, well transcribed and quaintly illustrated.

E. Engel, "Geschichte der deutschen Literatur." (Leipzig: Freytag.) 2 vols. 12*s.*

Vigorous, original, and stimulating.

K. Kaiser, "Edelsteine deutscher Dichtung." (Leipzig: Teubner.) 2*s.*

Well suited for school use.

Goethe, "Bilderbuch, für das deutsche Volk." Herausgegeben von Fr. Neubert. (Leipzig: Schulze.) 8*s.*

A very fine and careful selection of pictures illustrating Goethe's life; suitable for the school library or as a prize.

W. Rippmann, "Der goldene Vogel and other Tales." (Dent.) 1*s.* 4*d.*

The exercises suggest many ways of practising grammar without translation.

J. Naumann, "Theoretisch-praktische Anleitung zur Besprechung und Abfassung deutscher Aufsätze." (Leipzig: Teubner.) 4*s.* 10*d.*

A very large number of essays and a good list of subjects, covering a wide range. Valuable hints for the teacher.

P. Passy, "Petite Phonétique Comparée des principales langues européennes." (Leipzig: Teubner.) 1*s.* 10*d.*

Interesting and useful for the teacher or student of modern languages.

Classics.

Several important books were published last year on classical subjects.

"Cults of the Greek States." By L. S. Farnell. (Oxford: Clarendon Press.) Vols. iii. and iv. 36*s.*

This is a classified summary of the present state of our knowledge of Greek religious antiquities, both clear and cautious, and indispensable to the student. It leaves aside, however, most questions of origin.

"Life in the Homeric Age." By T. D. Seymour. (Macmillan.) 17*s.* net.

A classified summary of the evidence in the Homeric poems as to antiquities.

"Thucydides Mythistoricus." By F. M. Cornford. (Arnold.) 10*s.* 6*d.* net.

A critical analysis of the literary form of Thucydides.

reducing it to the formula of the Greek tragedy. The author's historical insight is impugned. This book is suggestive, even if not convincing.

"Attis, Osiris, and Adonis." By J. G. Frazer. (Macmillan.) 10*s*. 6*d*.

Treats of certain Greek cults from the ethnologist's point of view. A useful complement to Farnell.

"The Greatness and Decline of Rome." I. and II. By G. Ferrero. (Heinemann.) 17*s*. net.

A brilliant narrative, giving new views of Julius Caesar and his contemporaries.

"The Discoveries in Crete." By R. M. Burrows. (Murray.) 5*s*.

A careful summary of results, but insufficiently illustrated.

"The Art of the Greeks." By H. B. Walters. (Methuen.) 12*s*. 6*d*. net.

A very cheap and well-illustrated volume.

"Life in Ancient Athens." By T. G. Tucker. (Macmillan.) 5*s*.

The following editions of texts may be mentioned:

"The Plutus of Aristophanes." By B. B. Rogers. (Bell.) 8*s*. 6*d*.

Original notes, with a clever verse translation, and accompanied by a verse translation of the "Menaechmi."

"The Frogs of Aristophanes." With Notes, &c., by T. G. Tucker. (Macmillan.) 3*s*. 6*d*. net.

Very few school books deserve mention. The following two are in our opinion the best:

"Cothurnulus." By E. V. Arnold. (Bell.) 1*s*.

Three plays on Roman subjects, written in simple Latin, and admirably done.

"Colloquia Latina, adapted from Erasmus." By G. M. Edwards. (Cambridge University Press.) 1*s*. 6*d*.

Both in matter and form these dialogues are excellent.

English Language, Grammar, and Composition.

"Elementary English Grammar through Composition." By J. D. Rose. (Bell.) 1*s*.

Useful for young pupils; copious exercises.

"The Teaching of English Grammar and Elementary Latin." By L. W. Wilsden. (Blackie.) 1*s*. net.

Intended exclusively as preparatory to the learning of Latin.

"A Junior English Grammar." By A. J. Ashton. (Bell.) 1*s*.

Based on Mason's well-known works; revised and brought up to date.

"The Growth of English." By H. C. Wyld. (Murray.) 3*s*. 6*d*.

For beginners; a lucid and accurate account of the development of English.

"Higher English." By F. J. Rahtz. (Methuen.) 3*s*. 6*d*.

Intended mainly for London Matriculation English; very suitable.

"Aids to the Study and Composition of English." By J. C. Nesfield. (Macmillan.) 4*s*. 6*d*.

Includes grammar, composition, rhetoric, and prosody. Much of it has appeared in the author's other books, but much is new.

"English Essays: Materials and Models for Composition from the Great Essayists." By J. H. Fowler. (Macmillan.) 2*s*. 6*d*.

An admirable idea admirably carried out.

"Elementary English Composition." By T. F. Huntington. (Macmillan.) 2*s*. net.

"Manual of Composition and Rhetoric." By J. H. Gardiner, G. L. Kittredge, and S. L. Arnold. (Ginn.) 4*s*. 6*d*.

Two excellent books, but more suitable for American schools than for ours.

"A Combined Course of Literary Reading and Composition." By L. Marsh. (Blackie.) 2*s*.

Interesting and instructive.

"Punctuation as a Means of Expression." By A. E. Lovell. (Pitman.) 1*s*. 6*d*.

An exhaustive treatment of the subject.

History.

For the Use of Teachers.

"Longmans' Political History of England in Twelve Volumes." Nine of these are now published (7*s*. 6*d*. net each).

Each by a different writer, the whole will form a standard history.

The "Cambridge Modern History" has now eight volumes, i.–iv., vii.–x. (12*s*. 6*d*. each).

It contains the latest results of research, and forms an excellent work of reference.

"History of Modern England." Vol. v. By H. Paul. (Macmillan.) 8*s*. 6*d*. net.

Completes the history 1846–1895.

"Factors in Modern History." By A. F. Pollard. (Constable.) 7*s*. 6*d*. net.

Eleven illuminating essays, mainly on English history in the sixteenth and seventeenth centuries.

For the School Library.

"An Introductory History of England." Vol. ii. By C. R. L. Fletcher. (Murray.) 5*s*.

A continuation of Mr. Fletcher's attempt to make history readable.

"Voyages of the Elizabethan Seamen." By E. J. Payne and C. R. Beazley. (Clarendon Press.) 4*s*. 6*d*.

Select narratives from the "Principal Navigations" of Hakluyt.

"A School History of Lancashire." By W. E. Rhodes. "A School History of Surrey." By H. E. Malden. "A School History of Middlesex." By V. G. Plarr and F. W. Walton. (Methuen.) 1*s*. 6*d*. each.

"The Story of Ancient Irish Civilisation." By P. W. Joyce. (Longmans.) 1*s*. 6*d*. net.

"Outlines of European History." By A. J. Grant. (Longmans.) 3*s*. 6*d*.

Source Books.

"English History Illustrated from Original Sources, 1216–1307." By N. L. Frazer. (Black.) 2*s*. 6*d*.

"Readings in English History." Book I. (to 1154), Book II. (1155–1485). By R. B. Morgan and E. J. Bailey. (Blackie.) 2*s*. and 2*s*. 6*d*.

Readers.

"Heroes of the European Nations." By A. R. H. Moncrieff. (Blackie.) 1*s*. 6*d*.

From the Greeks to Wellington.

"The Children of History." B.C. 800–A.D. 1000. By M. S. Hancock. (Pitman.) 1*s*.

"The Model Citizen." By H. O. Newland. (Pitman.) 1*s*. 6*d*.

Good for present-day institutions, though weak in the history.

Scottish History.

"The Story of Scotland for Junior Classes." By H. W. Meikle. (Oliver and Boyd.) 1*s*.

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

"Outline of Scottish History." By W. M. Mackenzie. (Black.) 2s. 6d.

Geography.

General.

"Junior Course of Comparative Geography." By P. H. L'Estrange. (Philip.) 2s. 6d.

Course A of the author's larger book.

"The Senior Geography." By A. J. and F. D. Herbertson. (Clarendon Press.) 2s. 6d.

Vol. iii. of the "Oxford Geographies"; stiff, but instructive and educational; numerous sketch maps.

"Introduction to Practical Geography." Sections i., ii., and iii. By A. T. Simmons and H. Richardson. (Macmillan.) 1s. each section.

Parts of the larger work published separately; full of useful problems and exercises.

"Geographical Diagrams." By H. J. Snape. (Black.) 1s. 4d.

Very useful for blackboard work.

Special.

"Our Own Islands." By H. J. Mackinder. (Philip.) 2s. 6d.

The first of four books promised; if the rest are like this they will form a series specially adapted to the wants of junior and lower senior classes.

"The British Isles." By L. W. Lyde. (Black.) 1s. 4d.

A sixth edition, written rather in the note-book style; useful for examinations.

"Britain and the British Seas." By H. J. Mackinder. (Clarendon Press.) 7s. 6d.

A second edition of what is now recognised as a standard work.

"Over-sea Britain." By E. F. Knight. (Murray.) 6s.

Deals with Mediterranean, African, and American possessions; the rest are to form subject-matter for a second volume.

"The British Empire." By F. D. Herbertson. (Black.) 2s. 6d.

Last book of the "New Geographies" series—perhaps the best type of a geography "Reader."

"The Americas." By J. B. Reynolds. (Black.) 2s.

Well illustrated and well written; suggestive questions.

"From Trail to Railway through the Appalachians." By A. P. Brigham. (Ginn.) 2s. 6d.

An excellent treatise on man and his environment and his work.

Atlases, Wall Maps, &c.

"Atlas of the World's Commerce." By J. G. Bartholomew. (Newnes.)

The twenty-two fortnightly parts (6d. each) were completed early in the year; altogether a valuable compilation, comprising diagrams and much explanatory letterpress, and an instructive introduction on "Economic Geography" by G. G. Chisholm.

"Progressive Atlas of Comparative Geography." By P. H. L'Estrange. (Philip.) 3s. 6d.

The maps of L'Estrange's larger work published separately.

"Handy Volume Atlas of the World." By E. G. Ravenstein. (Philip.) 3s. 6d.

A seventh edition, which speaks for itself.

"Elementary Relief Atlas." By M. G. Morrison. (Bacon.) 8d.

Good, for the price.

"Geological Atlas of Great Britain and Ireland." By H. B. Woodward. (Stanford.) 12s. 6d.

This is an improved edition of a well-known reference work.

"North America." By H. J. Mackinder. (Stanford.) 20s.

A wall-map of the "New Orographical" Series.

"Commercial and School Wall Map of Canada." (W. and A. K. Johnston.) 27s. 6d.

"Standard Time Dial." By R. A. Gregory. (Philip.) 3s. 6d.

Devised to find the relation anywhere between longitude and time.

Mathematics.

"A First Statics." By C. S. Jackson and R. M. Milne. (Dent.) 4s. 6d.

The descriptions of experiments serve either as a guide to or a substitute for laboratory work. The collection of problems throughout the book attains to a high degree of excellence.

"Cartesian Plane Geometry, Part I., Analytical Conics." By C. A. Scott. (Dent.) 5s. net.

The feature of this book is the use of line co-ordinates almost on a par with point co-ordinates from the beginning.

The two books above possess so much originality and interest that they should be on the shelves of every teacher of these subjects.

"Murray's School Arithmetic." With Supplementary Exercises. By A. J. Pressland. (Murray.) Without answers, 2s.; with answers, 2s. 6d. Supplement, 6d.

Each type of question is introduced by "Examples for Discussion," so arranged that the use of the blackboard can to a great extent be avoided. The chapter on "Abbreviations, Checks, and Estimates" is especially good. The Supplement is an essential part of the book.

"Plane Geometry for Secondary Schools." By Charles Davison and C. H. Richards. (Cambridge University Press.) 4s.

A course of theoretic geometry containing an excellent collection of riders, and all the most important supplementary propositions.

"Elementary Algebra: a School Course." By W. D. Eggar. (Edward Arnold.) 3s. 6d.

The beginning is very well arranged, the introduction of problems before simple equations being a special feature.

"Geometry of the Conic." By G. H. Bryan and R. H. Pinkerton. (Dent.) 3s. 6d.

Treats the different conics together; contains a good collection of examples, mainly of a practical nature.

"Elementary Statics." By W. G. Borchardt. (Rivingtons.) 3s. 6d.

Contains a good collection of examples. The worked-out examples are the best part of the bookwork.

"Bell's New Practical Arithmetic for Elementary Schools." By W. J. Stainer. (Bell.) Years i. to vi., 3d.; year vii., 4d.; teacher's copy, 8d.

Contains a good cheap course of examples in arithmetic and algebra up to quadratics.

"Modern Arithmetic, with Graphic and Practical Exercises, Part I." By H. Sydney Jones. (Macmillan.) 2s. 6d.

A good course of arithmetic up to "Junior Locals" standard.

"Arithmetic, chiefly Examples." By G. W. Palmer. (Macmillan.) 3s. 6d.

Unitary method is replaced by the use of ratio, which is carefully discussed. Many examples are taken from scientific and other newspapers.

"New Geometry Papers." By R. Deakin. (Macmillan.) 1s.

Contains a well-arranged collection of exercises and riders.

Chemistry and Physics.

For Class Use.

CHEMISTRY.

"The Complete School Chemistry." By F. M. Oldham. (Methuen.) 4s. 6d.

"An Elementary Study of Chemistry." By Dr. W. McPherson and Dr. W. E. Henderson. (Ginn.) 6s.

"Practical Chemistry for Army and Matriculation Candidates." By Geoffrey Martin. (Crosby Lockwood.) 2s. net.

"A Course of Practical Organic Chemistry." By Dr. T. Slater Price and Dr. F. Twiss. (Longmans.) 3s. 6d.

"Practical Physical Chemistry." By Dr. A. Findlay. (Longmans.) 4s. 6d. net.

PHYSICS.

"Physics—Theoretical and Descriptive." By H. C. Cheston, J. S. Gibson, and C. E. Timmerman. (Heath.) 3s. 6d.

"A First Course in Physics." By Dr. R. A. Millikan and Dr. H. G. Gale. (Ginn.) 5s. 6d.

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

"Heat Shadows." By W. Jamieson. (Blackie.) 6d. net.

"Theoretical and Practical Mechanics and Physics." By A. H. Mackenzie. (Macmillan.) 1s.

For the Use of Teachers.

"A History of Chemistry from Earliest Times to the Present Day." By Ernst von Meyer. Translated by George McGowan. Third English edition. (Macmillan.) 17s. net.

"Stereochemistry." By Dr. A. W. Stewart. (Longmans.) 10s. 6d.

"John Dalton." By J. P. Millington. (Dent.) 2s. 6d. net.

"Theories of Chemistry." Being Lectures delivered at the University of California, in Berkeley. By Svante Arrhenius. (Longmans.) 5s. 6d. net.

"Radio-active Transformations." By Prof. E. Rutherford, F.R.S. (Constable.) 16s. net.

"Electrons, or the Nature and Properties of Negative Electricity." By Sir Oliver Lodge, F.R.S. (Bell.) 6s. net.

"The Electron Theory: a Popular Introduction to the New Theory of Electricity and Magnetism." By E. E. Fournier d'Albe. (Longmans.) 5s. net.

"Physical Optics." By Prof. R. W. Wood. (Macmillan.) 15s. net.

"Applied Optics." By H. Dennis Taylor. (Macmillan.) 30s.

"The New Physics and Chemistry: a Series of Popular Essays on Physical and Chemical Subjects." By W. A. Shenstone, F.R.S. (Smith, Elder.) 7s. 6d. net.

"A Text-book of Practical Physics." By Dr. W. Watson, F.R.S. (Longmans.) 9s.

"The Manufacture of Light." By Prof. S. P. Thompson, F.R.S. (Macmillan.) 1s. net.

"Technical Electricity." By H. T. Davidge and R. W. Hutchinson. (Clive.) 4s. 6d.

"Modern Views of Electricity." By Sir Oliver Lodge, F.R.S. Third edition, revised. (Macmillan.) 6s.

Natural History.

Botany.

"Wild Fruits of the Country Side." By E. F. Hulme. (Hutchinson.) 5s. net.

Useful in nature-study courses.

"The Principles of Horticulture: a Series of Practical Scientific Lessons." By W. M. Webb. (Blackie.) 2s.

An excellent introduction to botanical science.

"Plant Biology." By F. Cavers. (Clive.) 3s. 6d.

Contains good chapters on ecology.

"Plant Response as a Means of Physiological Investigation." By J. C. Bose. (Longmans.) 21s.

Zoology.

"Birds of the Country Side." By F. Finn. (Hutchinson.) 5s. net.

Valuable to the outdoor naturalist.

"The Bird, its Form and Functions." By C. W. Beebe. (Constable.) 14s.

A book on unusual lines, and most helpful to the teacher.

"An Outline of the Natural History of our Shores." By J. Sinel. (Sonnenschein.) 7s. 6d.

Far the best book of its kind for shore work.

"A Health Reader." By Dr. C. E. Shelly and E. Stenhouse. Books I. and II. (Macmillan.) 1s. and 1s. 4d.

An admirable series of elementary lessons on hygiene.

"Experimental Zoology." By T. M. Morgan. (Macmillan.) 12s.

A most suggestive work, and justifies zoology as an experimental science.

General Biology.

"Mendelism." By R. C. Punnett. (Bowes and Bowes.) 2s.

A concise exposition of this important subject.

"Recent Progress in the Study of Variation, Heredity, and Evolution." By R. H. Lock. (Murray.) 7s. 6d.

"Species and Varieties: their Origin by Mutation." By H. De Vries. (Kegan Paul.) 21s.

The only full account of the views of this author in the English language.

"Darwinism To-day." By V. L. Kellogg. (Bell.) 7s. 6d.

THE ARTIFICIAL LIGHTING OF SCHOOLROOMS.[1]

SCHOOLROOMS are artificially lighted by gas or by electricity. Electric lighting has advantages of cleanliness, absence of heat, and freedom from deterioration of the air. The drawback to electric lighting is its cost, which, based on estimates derived from a dozen schools during 1905, amounted, in the case of electric lighting, to 1·7 that of gas. Quite apart from this question of relative cost, the illumination of the class-rooms required investigation. Mr. Bishop Harman undertook an inquiry, and has furnished the following report as to the best positions of the sources of light, and the best distribution of the light, and what simple improvements could be suggested. His experimental observations were done in schoolrooms and in his own laboratory.

MINIMUM DESK ILLUMINATION.—The possibility of distinguishing one object from another by sight depends primarily on the illumination of the objects. A finger

[1] Abridged, with special permission from the London County Council, from the Report of the Education Committee of the London County Council submitting the Report of the Medical Officer (Education) for the year ending March 31st, 1907.

mark on a sheet of white paper is easily recognisable in good daylight, but not easy of recognition by candle-light. The same principle holds good for distinguishing print on paper. The possibility of distinguishing any given object depends upon the familiarity of the examiner with the object examined. A normal-sighted person of middle age will distinguish characters on paper in a poor light with greater readiness than a small child, because the characters are more familiar to the adult, and so much more easily recognised. Conversely, a child requires a better light to learn to read than does an adult to whom reading is second nature. From a large number of experiments the least illumination permissible on the school desk of a child has been found to be equal to 10 "metre-candles." This may seem a large amount of light if ten wax candles fixed in a chandelier and their effect in a room is considered, but it is not large when compared with ordinary daylight in a fairly lighted room. On a cloudy day, with the sky dull, and not a ray of sunshine, the light on the paper is equal to 60 m.c., and the desk is 14 ft. from the window, and even at a distance of 24 ft. the illumination is equal to 30 m.c. So that 10 m.c. is a modest demand for the minimum illumination on each desk in a schoolroom.

VARIETY OF ILLUMINANTS.—The use of naked gas jets is still the rule, especially in the non-provided schools, but the Welsbach fittings are supplanting them rapidly with excellent results. The value of naked gas jets as a direct

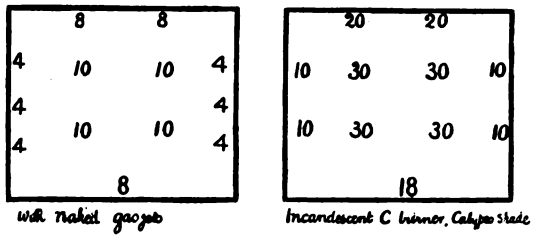

FIG. 1.

illuminant as compared with the superior value of the use of the same or a less quantity of gas with the Welsbach mantle cannot better be shown than by giving the result of the comparative examination of one room fitted with these two varieties of burners (Fig. 1).

A convenient infant class-room hung with four points of gas was fitted first with the most approved form of naked gas burner, Bray's No. 4 with No. 6 regulator, that is, a good pattern well-made fish-tail burner of No. 4 size with another No. 6 size slipped over it. The effect of this double burner is to reduce excessive gas pressure or "flaring," and give a steady flat flame of high illuminating power. The desk lighting was then examined. Then these burners were replaced by Welsbach "C" burners and mantles with "Calypso" shades. Although the gas consumed with the Welsbach burners was no greater, perhaps less, than that burned by the fish-tail burners, the desk illumination was increased nearly threefold over the whole room. With the naked gas jets the minimal desk illumination was obtained over only a very small part of the room. The desk area A, B, C, D (Fig. 2) of the room is 179 sq. ft., and the patch of fair illumination 26 sq. ft., and this only when no obstruction, such as the bodies and hands of the children, come between the lights and the desks.

On the other hand, with the Welsbach the illumination never falls below 10 m.c., whilst in most parts of the room there is an ample margin for the interference which bodies or hands will make with the light. This room is not quoted as showing how a room should be lighted; on the contrary, it is an example of bad lighting. It is bad when lighted by naked gas jets, because the light is insufficient, and still bad when lighted by Welsbach light, because the lights are badly placed. For schoolrooms with the usual company's gas, naked gas jets afford a poor and wasteful illuminant. In such a room as quoted, at least four more burners would be required to obtain the minimal desk illumination. The cost, the heat, the consumption of air, and production of fumes and soot, would all thereby be doubled. Again, the

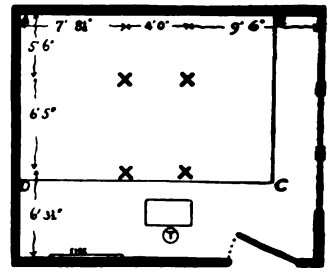

FIG. 2.—Test Class-room Arrangement.

sootiness of these jets prevents the use of suitable reflectors, and a great part of the light is wasted. Even given the minimal illumination, the light is yellow and unsteady. The colour does not give the best contrast, and the flicker is very objectionable and fatiguing.

INCANDESCENT GAS LIGHT.—The preceding example is enough to show the advantage of this means of lighting. The examination resolved itself into a determination of what form of burner, shade, and pendant is most useful for class-rooms, and the position of the lights in the room. The three burners examined were "C," "Kern," and "Simplex." The last is the latest pattern produced, and seems to be the best of the three as regards the light given. The light given by it, and the mantle provided, is better than that with the others. It has the advantage of being 2½ in. shorter than the "Kern." It has a good air regulator, which, although theoretically unnecessary with a constant gas pressure, is practically a most important part of the burner, and a device by which it is possible to improve the light considerably. The burner might be improved in some details. The makers have now, accordingly, supplied a pattern burner without the unnecessary brasswork obstructing the downward path of the light rays, which is an improvement. With a good burner and mantle a proper shade is the most important part of the gas fitment. For desk-work, a Welsbach light without a shade is rather worse than a naked jet, because the brasswork of the burner casts a black shadow beneath the light; by reflection from a shade, the light can be so distributed as to be practically perfect. Such a lamp-shade for school use should, in the first place, be cheap and durable. It should reflect the light so that there is no shadow beneath the burner. It should also so reflect the light that the lamp at a given distance will efficiently cover a given area.

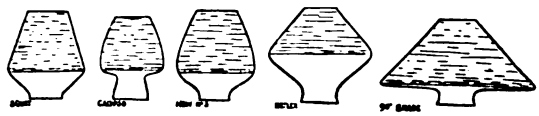

FIG. 3.

The shade should also protect the teacher's eyes from the direct glare of an exposed mantle. Four varieties of shades were submitted for examination: "Squat," "Calypso," "New No. 3," and "Reflex." Most of the shades or globes on the market are adaptations of the old globes

around naked gas jets, and variously altered or contorted to suit the fancy or æsthetic ideals of the makers.

The inadequacy of such a form as the "Squat" is obvious. The sides subtend an angle of 45° to 50°, and do not reflect the light past the massive brass burner. In the "Calypso," with something of a parabolic reflector in its shape, the opaque mass of the burner is particularly effective in stopping the rays. "New No. 3" differs only from the "Calypso" in the shape of the lower clear glass portion, which is immaterial. The "Reflex" is an attempt in the right direction, but its details have been carelessly arranged, so that in class-rooms it may be very objectionable to the teachers. Efficient reflection can only be obtained from a Welsbach burner when the opal sides of the shade subtend an angle of about 90°. The opal upper portion of the "Reflex," 2¾ in. vertical, is shaped on this plan, and, consequently, the shadow beneath the burner is less than with any of the other shades. The lower part of the shade, 2½ in. perpendicular, is of clear glass, so that two-thirds or more of the incandescent mantle is directly exposed to the teacher's eyes, the effect being intolerably dazzling. For this reason the "Reflex" is quite unfitted for the class-room. This effect is easily remedied by extending the sides of the "Reflex" with a simple paper shade figured as the 90° shade globe.

The relative values of these shades from the point of efficient lighting can be shown by the figures from the

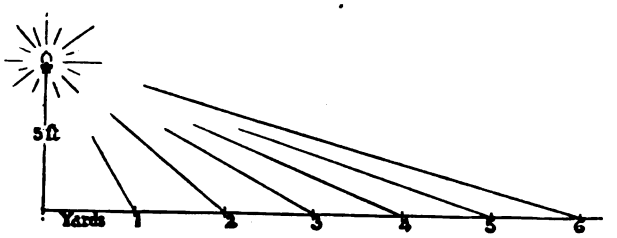

FIG. 4.

following experiment, in which the metre-candle value of the illumination was measured on the desks immediately below the burner, and then at intervals of a yard along the horizontal desk-tops, which were 5 ft. vertically below the burner. All the shades were examined in this way. The results found for the "Squat," "Calypso," and "New No. 3" were alike, and 1 m.c. less than the "Reflex," below the burner: they are therefore omitted from the table. The experiments were made consecutively with the same burner and mantle.

Table of results with "Simplex" burner and "C" mantle in metre-candles:

Shade	Perpendicularly below burner	½ yd.	2 yds.	3 yds.	4 yds.	5 yds.
None	<1	2	2	1+	1	1
"Reflex" globe ...	8	8	5	2	1	1
90° shade globe ...	22	15	7	2	1	1

The improvement on the unreflected light by the use of the "Reflex" shade is great, but the results to be obtained by increasing the depth of the shade are most striking. The gain is obtained by reflecting the rays that would otherwise be dissipated upon the upper part of the walls of the room, and the teacher's eyes are screened from the dazzling of the naked mantle by the depth of the shade. The general wall illumination of the room does not suffer; it is quite as good as when the "Squat" is used, and although not so bright as with the "Reflex," yet, owing to the absence of the dazzling effect of the exposed mantle, it appears better. The shadow beneath the burner can be estimated by the simple test of holding a large sheet of white paper below the burner. When no shade is used, a sheet of paper held a yard below the burner shows a deep shadow more than a yard in diameter; with the "Squat" or "New No. 3," deep circular shadows about 2 ft. diameter are cast. The "Calypso" throws a small central blot with a secondary outer ring of darkness. With the 90° shade globe, as devised, no shade could be detected, even when the screen was held up to within a few inches of the burner. This 90° shade globe fulfils all the four conditions required for a school globe, and could be made without any difficulty or any material increase in cost as compared with those now in use. Two kinds of pendants are now in use, a "two-light" and a "harp-shaped." The former is the ordinary ⊥-shaped pendant, with a light at the extremity of each arm. The "harp-shaped" is a single-light pendant, formed by a perpendicular length of tube suspending an elongated elliptical-shaped loop. Since all rooms are not the same size, the two-armed pendant is not fitted for general use. With a properly devised "harp-shape," the lights can be placed individually where most wanted. For such a pendant there is the usual ceiling plate, ball-and-socket joint, and a variable length of tubing to suit the height of the room. The loop is triangular in shape—one side carries the gas; the other side is merely a support to balance the shade. On the gas side is the stop-cock, which is on the bend and quite clear of the bottom tube. The burner is to screw clear on to the bottom tube, without any wasted room filled in with needless brasswork.

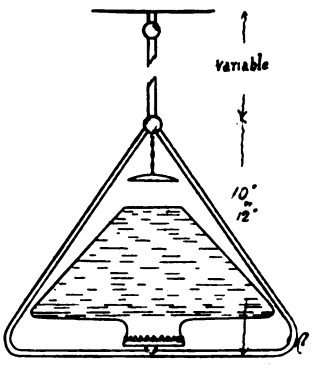

FIG. 5.

ARRANGEMENT OF LIGHTS.—(i) Each class-room should be considered as being made up of two portions, the children's area and the teachers' area, and the lighting of these parts must be arranged independently.

(ii) Left-hand lighting must be arranged for as far as possible, exactly as in the rules for window lighting.

(iii) In calculating the area over which the rays of a lamp will extend, we must only take into our valuation those rays which proceed from lamps in front of the class to the back of the class. Lamps in front of a class illuminate to some degree the desks of the back row, but lamps to the back of a class do not help to illuminate the front rows of desks when the children are in their places.

(iv) There must be a clearance of 6 ft. 6 in. beneath pendants, and the luminous mantle must be as closely as possible approximated to this level; hence burners must be short and cocks or by-pass fittings must be placed on one side of the pendant arms, and not between burner and pendant.

From suggestions (ii) and (iii) it will follow that the main desk lighting will be arranged to come from the left, and somewhat in front of the child. The gasfitter should mark the position of the first lamp to be hung

over the centre of the first dual desk on the child's left of the front row. Proceeding, lamp positions should be marked out along this front row at from 6 ft. to 9 ft. intervals, according to the height of the desks from the floor, being closer in infants and further apart in the higher standards. The row of lamps thus marked out would give sufficient light for the front row and the second row of desks. A second row of lamps similarly spaced would light the third and fourth rows of desks. Since a lamp hung behind a child throws no light on the desk of that child, it follows that the space between the lamps from front to back of a room should be less than that between the lamps from side to side of the room.

In Fig. 6 the plan of a model room is given to accommodate forty children. The children occupy two-thirds of the floor space, and the lamps for this area may be hung so as to give efficient lighting in two ways, according as to whether infants or older scholars are to occupy the room.

For a room with well-grown children we need only reckon 4 ft. as the perpendicular distance from lamp to desk, and with this shortened distance the power of the lamps is improved by one-third, so that two lamps over the first and two over the third rows of desks in positions marked BB would be sufficient. The illumination of the teachers' portion of the class-room must be taken separately. Here are hung maps, charts, and the blackboard. Blackboards or slates should be fixed against the wall with the right hand slightly tilted forward, as shown in sketch. They should always occupy the right-hand half of the wall behind the teacher. For illumination, when daylight fails, a pendant should be hung to the left of the teacher's desk in the portion marked X; this light should be fitted with a chimney and a metal shell-shaped reflector, opaque to light, to project the light well on to the blackboard or master's desk as required, and to present a dark back to the children.

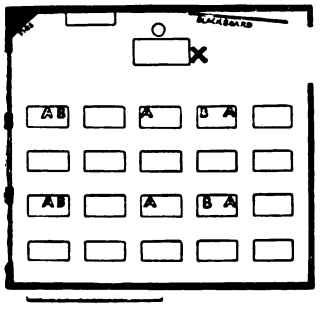

Fig. 6.

Electric Lighting.—Handiness, simplicity, and ease of distributing points of light, complete absence of shadows below the lamp, the possibility of perfect reflection, healthiness in freedom from consumption of air and production of fumes, and noiselessness, make lighting by the electric glow lamp the most perfect means now available for school use, the only drawback being its present greater cost; as already stated, this worked out in 1905 at about 1·7 times that of gas.

The following experimental examination of the illumination given by a glow lamp under different shades will give an indication of the value of the light. A 16 c.p. lamp was used with 100 volts of the supply. The lamp was hanging in a room chosen for its convenience and the measurements made in a plane 4 ft. below the level of the lamp:

Shade	Below lamp	1 yd.	2 yds.	3 yds.	4 yds.
None	5 m.c.	+3	+1	1	1
110° 3½ in. deep	20	9	5	3	1
80° 5 in. deep...	30	9	5	2	1

Two sorts of opal shades are in use in the schools; one subtends 110° in the sides, and has a vertical depth of 3½ in. This shade does not cover the lamp, and the incandescent filament is exposed to the teacher's eyes. The other shade has sides subtending an angle of 80°, and with a vertical depth of 5 in.; this shade completely screens the lamp from the teacher, and is the one to be preferred for class-room purposes, as the light below is also increased by one-third. These lamps throw an image of the filaments. If a sheet of white paper be held under the lamp at the distance of a yard, four bright stars, each with a bright tail outwards, will be seen marking the corners of a square of 1 ft. side. At the distance of two yards the separation of the points is 2 ft. The better the reflector over the lamp, the less noticeable are these lines. Ground-glass bulbs obscure the lines completely, but frosting the glass reduces the illumination by 25 to 30 per cent.

The only suggestion to be made as to bulbs is that these should be as large as possible, and the filament twisted in as long a loop as possible. The "Tantalum" and the "Nernst" lamps have also been examined. The former appears very good, but the latter is unsuitable for schoolrooms.

The distribution of the lamps should follow the lines indicated for the gas pendants. Beginning at the left hand of the children's portion of the class-room, a lamp should be hung over the centre of the first dual desk, and from there across the breadth of the room at distances of not less than 6 ft. and not more than 9 ft. for 16 c.p. lamps with 90° shades. With gas the fewest possible number of burners is desirable, for the more burners the worse the atmosphere; but with electricity, the points of light may with advantage be more generously disposed, and a cross room spacing of 6 ft. might be uniformly arranged. A second row of lamps should be hung in the same relation over the third row of desks. The lamps, as usually hung, err in being hung too far back; for instance, over a back row of desks, with the idea of their illuminating the desks in front, which they, however, fail to do when the children are present in their seats. The use of a front row of lamps with tilting shades, to light the blackboard in the teacher's section of the room, or desks in the children's portion, fails to serve both purposes in practice. It would be better to use a lamp to illuminate the desk and blackboard, and completely shaded from the children's portion of the room. The most common complaint in electrically lighted schools is want of light owing to low pressure in the supply. Sudden and total failure also occurs occasionally. In installing electric light, it should be used in class-rooms only. Staircases and passages should be lighted with gas—naked jets with wire frames.

In addition to these ordinary means of illumination used in the schools, there are several other methods used in America or on the Continent. The inverted gas burners with incandescence, recently much used in shop lighting, although they throw the light downwards, have drawbacks for school use. With an inverted Bunsen burner, the combustion is imperfect, and noxious fumes escape to a much greater extent than with erect burners. They are also very susceptible to variations in pressure, and at times give very poor light. They easily get out of order, and require a great deal of attention. In some non-provided schools they are found in very bad condition.

Refraction and reflection in certain forms of shades have been much recommended in America for school use. The "Prismatic" and "Kalophane" globes were examined.

The "Prismatic" globe has the outer surface of a glass bowl moulded into a series of prisms, running round the bowl, and so placed as to throw light downwards. It is very effective, especially when a flattened opal shade closes the mouth of the bowl. The combination is costly and heavy, and an equally good effect can be obtained with the 90° shade globe.

Indirect illumination by reflection is now a very favourite method in the newer German schools. By this method powerful lights, usually arc lamps, are hung from the ceiling with metal reflectors below them; the light is thrown on to the white ceiling or to special reflectors, and reflected as a delightfully uniform and soft radiance over the whole room. The effect is not unlike daylight of modified brilliance, and it is most successfully employed in shops and showrooms, where the deep shadows of direct light would be destructive of the general effects of mass and colour required to be shown. It is, however, not good where continuous and detailed work at a desk is required. The system was adopted in the New Anatomical Laboratories of Cambridge University, but has had to be superseded by direct glow-lamp illumination.

A GERMAN VIEW OF ENGLISH EDUCATION.

AN interesting leading article entitled "English and German Education" was contributed to a recent number of the well-known Berlin periodical *Die Woche* by Geheimer Regierungs-Rat Dr. Wilhelm Münch. Starting with the lines from Goethe's "Iphigenie":

> "Ein jeglicher muss seinen Helden wählen,
> Dem er die Wege zum Olymp hinauf
> Sich nacharbeitet,"

Dr. Münch argues that what applies to individuals applies, with modifications and variations, to nations. One nation may learn from another, and at the same time teach. He directs attention at the outset in generous terms to the acknowledged eminence of England as an instructor to the civilised world. Our constitution, our industrial and commercial system and enterprise, our colonising genius, that much-abused asset the Englishman's consciousness of his nationality, the freedom, independence, and dignity of the citizen, the "beneficent independence and activity of our women," the freedom of intercourse between the sexes, our leading position in healthy sport—these, amongst other things, are adequately described as our assets, distinctive traits of England and of English life and character that have long exercised an influence upon all civilised life and organisation.

Of such assets the Englishman is perhaps only too proudly conscious; indeed, this is suggested later in the article; but for such a startling statement as follows we are probably unprepared. "More surely, perhaps," writes Dr. Münch, "than in all the above-mentioned, do we now see in the English system of education the right model, and especially for our German system." He then expounds the leading features of our educational system and ideals, making such a selection as may bear out his contention.

The cultivation of the will, in his view, stands well in the foreground in our system. A strong, determined will is estimable in comparison with one of an opposite nature, but its energy may be misdirected, deliberately or in consequence of a mis- or ill-informed mind. Its direction may not accord with the requirements, the well-being, the orderliness of the community. Spleen is often manifested when it encounters an opposing force—this only when there is a lack of balance between will-energy and "mind." In the Englishman the will-energy outweighs the "mind"; in the German the opposite obtains. Here, then, both nations may learn and teach.

The German ideal of a general and "harmonious" education seems to him lacking in England. But this is not to be regarded as a direct drawback, for the German "harmony" is only of intellect, and generality of information is not accompanied by intense insight into anything. Still, even Englishmen of the upper classes seem to him deficient in extent of knowledge, and in one particularly lamentable way is this narrowness shown: they can rarely look beyond the immediate practical end of knowledge to the wider knowledge of the truth and rejoice in it for its own sake.

Our sports are criticised with full knowledge and appreciation—rare things in a foreigner. Their general advantages in developing "alert attention, quick decision, manliness, feelings of comradeship, and the sense of right and justice," are claimed for the German gymnastic exercises. Dr. Münch accepts the principle generally accepted by modern educationists—that games must be indulged in from *choice*, but reminds his readers that the greatest teachers of a past day have insisted on *duty*. "Sports victorious over learning" he deplores with the best thinkers of our own land, and is of opinion that our games as a means of developing sound will-power are overrated. We lay too much stress on every schoolboy being a good animal; injustice is done to those of an intellectual bent if this is accompanied by physical debility. May not *mental* exertion contribute equally to *physical* soundness? All these criticisms, he admits, do not affect the fact that physical deterioration is more widespread amongst German than English schoolboys, and proceeds: "After all play is something essentially juvenile, and when the liking for it is missing, a bit of the best part of youth is lost or has been killed. Such was the case with German schoolboys in their entirety fifty years ago. The best of the English games is this, that they warrant a lengthened span of youthful days, that they preserve the mind from harmful ways, and that they fill minds still comparatively empty with harmless, happy zeal. And for this reason even the men maintain a real, living interest in this branch of life; they do not merely occasionally *descend* to the level of youth, but find themselves in true unison with it."

This unison leads to the friendly relations between master and pupil, an altogether commendable phase which is entirely lacking in Germany. Without such relationship frankness and truthfulness on the part of the schoolboy cannot exist, and, indeed, there arises hostility between master and pupil. The phenomenon is not native to England; Dr. Münch ascribes its "introduction" to Arnold, and asks intensely, "Can it not be introduced into Germany?"

Our codes of rules regarding breaches of discipline and their punishment receive special recommendation. They are compared to the laws of the land, recognised by parent and pupil, submitted to by the latter as a point of honour. Even corporal punishment is commended: it is "primitive," but more definite than other "more refined" punishments.

The recognition of English youths as responsible individuals is probably the outcome of our developed ideas of civic freedom and democratic government. By means

of this, again, master and pupil are brought closer together. The "prefect" system meets with approval, although it is in direct opposition to German canon, and residential schools in the English spirit (not the French) are strongly advocated.

Here Dr. Münch's approbation stops short. It has extended only to the "public schools"; lower grades, he sees, are but badly catered for, and it is unnecessary to enumerate here those failings and shortcomings so well known even to the self-conscious Englishman. Suffice it to say that he condemns "classical education," mechanical teaching and examination, and ultra-utilitarianism in aim and conception, as most assuredly antiquated, unscientific, and narrow. "History," he says, "even to the aristocratic classes, busies itself only with Greeks, Romans, and Englishmen."

Finally he has a word for our criticism that "the German system is only designed, and is in fact only practicable, in order to produce the most pliant and submissive subjects." He holds that Germany is in no greater need of minds that work independently than other lands, and that there is no proof that submission is a characteristic of the nation. "It is a difficult matter to steer between self-depreciation and over-estimation." We must agree with him that the nation which ceases to develop at once begins to congeal. G. T. H.

HISTORY AND CURRENT EVENTS.

LORD CURZON gave the Romanes lecture this last autumn at Oxford. May we give a rather long extract from it, asking our readers to bear in mind a possible parallel and contrast with the Roman Empire of (say) the second century of our era? *Their* best was on the frontier, but it was largely composed of foreigners and mercenaries. "Now let us turn," said Lord Curzon, "to the other side of the world, where . . . the British Empire may be seen shaping the British character, while the British character is still building the British Empire. There . . . on the manifold frontiers of dominions, now amid the gaunt highlands of the Indian border or the eternal snows of the Himalayas, now on the parched sands of Persia or Arabia, now in the equatorial swamps and forests of Africa, in an incessant struggle with nature and man, has been formed a corresponding discipline for the men of our stock. . . . Along many a thousand miles of remote border are to be found our twentieth-century marcher lords." Our Pomerium, when we first proclaimed ourselves an Empire, was towards Wales and Scotland. Where, then, is it now?

"A CERTAIN number of persons have made themselves heard during the summer in a wild scream against the authority of St. Andrews. These people appear to be possessed of a passion for liberty which makes any government which is not strictly representative hateful to them." Note the terms used, "government," "authority," "liberty," "representative." They are all technical words of political science used perhaps not very accurately, but evidently having a political meaning. Yet the institution in question is the game of golf; the "government" is a committee at St. Andrews, which has apparently powers of legislation and jurisdiction over all contests on the links. Is, then, the community of golf players, in so far as they obey some authority, a State? If not, what definition of the word "State" must be used to exclude this community or the similar community which obeys in cricket the laws of the Marylebone Cricket Club? "They are under the laws of Great Britain." Yes, but so is the State of New York under the laws of the United States.

PERSIA is trying the experiment of a Parliament. It also has newspapers, and thus has two institutions for the purpose of expressing the thoughts of its people. Those thoughts seem mainly to centre on the Anglo-Russian agreement, according to part of which these two Powers have agreed to confine themselves respectively to the south and the north of Persia in their pursuit of commerce and influence. That looks, to the Persians, like a partition of their country, as if for the purpose of conquest. They can no longer play one off against the other, and are afraid of being made Christians by compulsion. "Then," they say, "our mosques would be turned into churches, our colleges into brothels, our prayer houses into wine houses, and the Koran would be succeeded by the Pentateuch and the Gospel." But which is to govern, the Shah or the Parliament? He has told them to distinguish well between executive and legislative powers, and adds, "Parliament possesses the latter, but must leave the former alone." If the Shah succeeds in getting his way on this point, he will be the first monarch to do so. It is not easy to draw the line, either in theory or practice.

IN November last there died Robert, Duke of Parma. The duchy of Parma was created in 1545 by Pope Paul III. for his illegitimate son Peter Farnese. Peter's son Octavius married Margaret, an illegitimate daughter of the Emperor Charles V. Their son was Alexander of Parma, who was ruler of the Netherlands for a time under Philip II., whose army was to have crossed the Channel in 1588 under the protection of the Spanish fleet, and who, as much as any man, saved the southern Netherlands for his cousin-master. The family died out in 1731, except for the daughter of the last duke but one, Elizabeth. She became in 1714 the second wife of Philip V., the first Bourbon King of Spain, and for the next twenty years she kept Europe in commotion to win the ancestral duchy, first for her elder son Charles, and then for her second son Philip. It is from the latter that the present house of Parma are descended. They have experienced two expulsions, the first that of Napoleon in 1807, which lasted until Napoleon's widow died in 1847, and the second that of Garibaldi in 1860, when Robert was a duke of twelve years of age, which has lasted ever since.

ITEMS OF INTEREST.

GENERAL.

THE next annual meetings of the Incorporated Association of Assistant-masters will be held on January 8th to 10th at Merchant Taylors' School, London, E.C. On the first two days the council will meet, and the general meeting of members will be held on January 10th at 10 a.m. At the afternoon meeting of the last day Prof. M. E. Sadler will read a paper entitled "Should Secondary Teachers be Civil Servants?" This meeting will be open to all members of educational associations, and to the general public. The annual dinner of the association will be held at Pagani's Restaurant, Great Portland Street, W., on January 9th at 7.15 p.m. Mr. A. A. Somerville, the chairman of the association, will preside.

THE annual meeting of the Association of Assistant-mistresses will be held on January 11th at Dr. Williams's Library, Gordon Square, W.C. In the morning, after the transaction of routine business, the presidential

address will be delivered, and the resolutions on curricula discussed. In the afternoon there will be a discussion of some points with regard to the new register, and a paper will be read on "Some Criticisms of Modern Methods of Teaching Geometry" by Miss Lee, of the City of London School for Girls.

THE Geographical Association is arranging a series of fortnightly lectures dealing with practical questions relating to the teaching of geography. The lectures are to be given by Mr. G. G. Chisholm, Prof. R. A. Gregory, Dr. A. J. Herbertson, Prof. L. W. Lyde, Mr. A. T. Simmons, and Mr. T. Alford Smith on alternate Friday evenings, beginning on January 24th, 1908, and details as to subjects and place of meeting will be announced later. Admission will be free to members of the association. The terms of membership can be obtained from the honorary correspondence secretary, Mr. J. F. Unstead, 5, Wiverton Road, Sydenham, S.E.

THE Modern Language Association will hold its annual meeting on January 7th and 8th at Queen's College, Harley Street. Among the questions to be discussed are the increasing neglect of German in English schools, introduced by Mr. Milner-Barry; modern language work in the West Riding, by Miss Matthews; the place of translation in modern language teaching, by Mr. Kirkman; and French plays and songs in schools, by Miss Purdie. Several resolutions on modern language teaching issued tentatively by the Board of Education will also be discussed.

THE annual meeting of the Association of Public School Science-masters will be held on January 14th at Westminster School. The president, Prof. H. Miers, F.R.S., will take the chair at 11 a.m., and deliver an address on "The Order in which Science Subjects should be Taught (*a*) in Public Schools, (*b*) at the Universities." In the morning also a discussion will be opened on teaching mechanics by Messrs. C. F. Mott and H. Wilkinson. In the afternoon the teaching of physics will be discussed, and papers will be read by Messrs. C. Cumming, W. E. Cross, and J. M. Wadmore. An exhibition of scientific apparatus and books will be open during the day.

THE Council of the Royal Meteorological Society desires to encourage the teaching of facts regarding weather and climate in schools, and is inviting elementary-school teachers and others to send in essays in the form of an original nature-study lesson on weather or climate (not exceeding 1,500 words in length), together with a brief synopsis of five other lessons to cover the whole subject of climate and weather. If essays of sufficient merit are received, three prizes will be awarded, of £5, £3, and £2 respectively. The essays must be sent in before January 31st, 1908, and addressed to Mr. William Marriott, assistant-secretary, Royal Meteorological Society, 70, Victoria Street, London, S.W., from whom further information can be obtained. This prize competition will no doubt stimulate many teachers to take an interest in the subject, and to impart to their scholars some definite teaching on weather and climate.

THE Federated Associations of London Non-Primary Teachers recently drew up a scholarship scheme and submitted it to the London Education Committee. According to this scheme, junior scholarships in secondary schools should be given to children between the ages of eleven and twelve from elementary schools. These scholarships should be tenable for five years, but should be awarded in the first place for a year only, being afterwards renewed for periods of two further years should the holder show himself fitted. Technical scholarships tenable for three years are recommended for children of thirteen years of age from higher elementary schools. Intermediate scholarships to secondary schools or certain special schools for two or three years are considered desirable for boys and girls of sixteen years of age. In selecting such scholarship-holders, a qualifying and competitive examination are both advised, though matriculated students would be excused the former. Senior scholarships to institutions of university rank should, the scheme says, be offered to boys and girls of eighteen years of age or upwards. So far, the scheme differs little from that adopted already by various education authorities.

IN addition to the scholarships enumerated, the scheme of the Federated Associations arranges for numerous technical scholarships. It is proposed that there should be at least 500 day technical scholarships for boys and girls between thirteen and seventeen years of age or thereabouts, and tenable in technical and trade schools, of value rising from £15 to £25 per annum, to be divided among engineering, building, artistic crafts, chemical industries, women's industries, and printing industries. The associations suggest that scholarships should be given to boys and girls of sixteen years of age with facilities for study at a technical day college for three mid-winter months, during which time they should be paid a maintenance grant. Such scholarships should be granted to those giving evidence of having followed a trade during the preceding nine months, and should be renewable from year to year for four years or more, subject to progress, and to attendance at evening classes on an average of twice a week for six months out of the nine. There should be a number of senior scholarships tenable in higher technical colleges created for technical students. These should be awarded to both day and evening students. The present evening exhibitions should be increased to 500, and the present system of awarding the scholarships be reorganised. A better way, it is suggested, would be to allot a proportion of the total exhibitions among the technical institutes, and the award of an exhibition might depend on special tests prepared by the institutes individually, subject, of course, to the approval of the London County Council.

THE London Education Committee has decided that no candidate resident outside the county shall be deemed eligible for any of the Council's awards in connection with the system of training of teachers unless the candidate is in attendance at a school or institution situated within the administrative county of London, or unless the business of his parent is situated within the county. From next August candidates for admission to the London Day Training College who are resident outside the county, and have held bursaries, student teacherships, or pupil teacherships under the Council, will not be required to pay the fees for their academic instruction at schools of the University, provided that they sign an undertaking that they will, at the end of the course, take up the position of an assistant-teacher in the service of the Council if called upon to do so, and serve, if required, for a period of two years. Similar candidates who have not held such bursaries or pupil teacherships under the Council, but who have passed one of the intermediate examinations of the University of London, will be awarded free places at the London Day Training College, together with free academic instruction at schools of the University, provided that their admission

does not exclude candidates resident within the county and similarly qualified, and provided, further, that they sign an undertaking that they will, at the end of the course, take up the position of an assistant-teacher in the service of the Council if called upon to do so, and serve, if required, for a period of two years.

THE Surrey County Council has decided to modify its method of awarding scholarships. For the future, the scholarships will not be awarded entirely upon the results of written examinations. A qualifying examination in ordinary elementary subjects is to be substituted, followed by a *viva voce* examination, and reports on the intelligence and previous conduct of the candidates are to be taken into account. There are to be three grades of scholarships, corresponding to the ages twelve to fifteen, fifteen to seventeen, and seventeen to twenty years. Maintenance allowances will be provided under certain restrictions for necessitous scholars of wage-earning age. Greater facilities are to be provided for pupils in the schools who desire to secure a technical training, and still further encouragement is to be given to young artisans at work during the day to attend evening classes.

AT the distribution of prizes on December 5th at Sexey's School, Bruton, Prof. M. E. Sadler delivered an address, in the course of which he said that during the last ten years more has been done to improve middle secondary schools in England than at any previous period. An elaborate system of scholarships has been built up. The claims of girls have been generously recognised. The passage of promising pupils from the elementary schools has been facilitated and encouraged. But four points of weakness require attention. First, the legal tenure and emoluments of assistant-masters in most secondary schools are on an unsatisfactory footing, and must be amended before this branch of the teaching profession can be recruited effectively from the universities. Secondly, the teaching of the mother tongue is generally poor. English boys are not taught to write English properly, and defective methods in this respect impair the power of clear thinking. Thirdly, England fails, as compared with Germany, to secure opportunities for higher secondary education at a cheap rate in day schools in the smaller towns. He suggested that the Board of Education should make annual grants of £10 a head to encourage higher departments in carefully chosen middle secondary schools. Fourthly, there is a need in some districts for a new type of secondary school with a leaving age of fifteen years, and with more practical work in the course of study. The dominant tradition in secondary education for boys has been fixed by the requirements of literary callings. It is now necessary to make bold experiments in a new type of secondary education better suited for the constructive callings.

DR. LEONARD G. GUTHRIE delivered the Fitz-Patrick lectures before the Royal College of Physicians of London on December 3rd and 5th. His subject was "Contributions from History and Literature to the Study of Precocity in Children." Abstracts of the lectures appeared in the *Lancet* of December 7th, and contain much information of value to teachers. Dr. Guthrie is of opinion that precocity in itself is not a pathological condition tending to early decease or to premature mental decay. All eminent men have been precocious as children, although in some cases their precocity may have been unrecognised. It is admitted that a certain proportion of precocious children have died young, but it is maintained that precocity was not responsible for their decease. Similarly, it must be admitted that many precocious children do not fulfil the promise of their youthful days, and that there is some foundation for the popular belief that clever children make dull men. The question what proportion of precocious children meet with success in after life admits of no complete answer. A genius is known to the world by what he does, and not by what he is.

A POINT of special interest in Dr. Guthrie's second lecture is the explanation he offers of the fact that geniuses have often been unrecognised by their schoolmasters. He pointed out that many eminent men have been considered dull in boyhood on account of an unrecognised "precocity of reticence." This may be due to early development of the critical faculty, as, for instance, in the cases of Heine and Hegel. The precocity of reticence is often associated, especially in imaginative, philosophic, and scientific persons, with dreamy mental states, inability to descend to "trivial rounds and common tasks," and unsociableness. It may be mistaken for sloth and indolence, as happened to Balzac, or it may be recognised as a sign of unusual promise, as in the case of Descartes, and treated as such. When reverie and inattention are interspersed with flashes of ability they may exasperate a teacher. Some quietly and imperturbably follow their bent, and assert themselves in spite of injudicious treatment. Tamer spirits give in, or may be spurred on to make superhuman efforts to excel in lines which do not suit them, and fail.

IN May last the Governor of Seychelles transmitted to the League of the Empire a resolution unanimously adopted by the Education Committee of Seychelles: "That this committee desires, through the medium of the League of the Empire, to obtain an expression of opinion from other colonies affiliated to Cambridge University for Local Examinations, as to whether they do not consider it advisable to approach the Cambridge Local Examination Syndicate with the view of having, in all arithmetic papers, questions in the metric or decimal system alternative to those in British money, weights, and measures, or, if not in British money, at least in British weights and measures." The League of the Empire has now received a second letter from the secretary of the Education Committee of Seychelles, saying the committee has been informed that the Cambridge Locals Syndicate has acceded to the request, and in future arithmetic papers will give metric questions alternative to those in British weights and measures (though not in money).

THE Department of Education of the Armstrong College (Newcastle-on-Tyne) has issued a modest little volume of papers (58 pp.) written by members of the staff and old students. The papers deal with a varied range of pedagogical topics—Bishop Tunstall's early text-book on arithmetic, "De Arte Supputandi"; the "Fulwell" method of teaching to read; German Kindergarten method; schools for defective children; nature-study; the school walk—and are in each case worthy of the attention of a wider audience than that to which they were originally addressed. The first two are excellently illustrated. Perhaps the most interesting article is one which summarises the answers to a *questionnaire* issued to old students who were invited to state their views upon the value of a training-college course. In face of the opinion held with somewhat unjustifiable confidence among sections of the profession where training is unusual, it is significant to find that, although the teachers who have passed through the department criticise particular details in the frankest manner, they are unanimous in affirming the benefit derived from the professional side of the course as a whole.

SCOTTISH.

MR. SINCLAIR, M.P., Secretary for Scotland, in opening a new school under the Edinburgh School Board, said that while all were agreed as to the desirability of a new Education Bill, there was by no means general agreement as to what it should contain. He believes, however, that the provisions of last year's Bill in regard to compulsory education in day school or evening school, and the medical inspection of schools and scholars, have met with general approval, and these features will almost certainly have a place in any new Bill. As to the other provisions, he is still an earnest searcher after knowledge, and intends to devote the remaining weeks of the recess to probing and examining educational opinion on various outstanding questions. This definite promise of educational legislation has given great satisfaction to the teaching profession, who confidently look for the reintroduction of the pension clauses on an improved basis.

AT a meeting of the Association of Secondary Teachers (West of Scotland branch) it was unanimously agreed to advise all teachers who were engaged in secondary or intermediate schools at the time of the passing of the regulations for the training of teachers to apply for recognition under the terms of article 42. This article states that all teachers in recognised positions will at once take rank as specially qualified teachers. Teachers contend that *all* teachers approved by the Department on or before June 6th, 1906, come under the term "recognised." The Department would like to interpret the word in a much more restricted sense; but teachers have taken legal opinion on the point, and are determined to stand by their reading of the regulations.

AT a meeting of the Border teachers, the degree of Honorary Fellow of the Educational Institute of Scotland was conferred upon Lord Tweedmouth, First Lord of the Admiralty. This is the highest distinction the teachers of Scotland have in their power to bestow. It is conferred "only upon distinguished educationists at home or abroad, or persons who have attained eminence as writers on educational subjects or who have rendered signal service to education." The roll of Honorary Fellows is very select, numbering only about twelve names. The most outstanding are those of the Prime Minister, Mr. Haldane, M.P., the Earl of Elgin, and Sir Henry Craik, M.P. Lord Tweedmouth throughout all his public career has been keenly interested in educational subjects, and has frequently shown his interest in the most practical manner.

MR. THOMAS SHAW, K.C., M.P., Lord Advocate, in opening Bonnington Road Public School, Leith, put in a strong plea for the preservation of the School Board system. The present system is based on popular and intimate local control, and to this he ascribes much of the success of Scottish education. The one weak link in the national system is the nature of the conditions for entrance to the universities. The finest products of the modern side of the secondary school find in these conditions an insurmountable barrier to further progress. He suggested to the universities that the time has come to modernise the conditions so that able pupils on the modern side may find free entrance.

MR. SCOUGAL, H.M. Chief Inspector of Schools, speaking after the Lord Advocate, said that a school of 2,200 is too big. The only way to manage such a school is to divide it into departments, putting a responsible teacher at the head of each, but subject to the control of the headmaster as supreme head. Mr. Scougal is undoubtedly right in his contention, and he is to be congratulated on this frank expression of his opinions. A school of 2,000 is no school at all. It is a barracks or a factory, and, subdivide it as one may, it can never become a school in any real sense. The Lord Advocate, who may always be trusted to display the courage of his ignorance, said in reply: "Trust the local authority of Leith. It knows its own business best." No inconsiderable part of the duties of Mr. Shaw's colleague, the Secretary for Scotland, is taken up with bringing to book local education authorities who do *not* know their own business best. Mr. Shaw must be perfectly well aware of this; yet in order to play up to his *rôle* of champion of School Boards, and quite regardless of flouting his own educational expert, he declares that whatever is is right.

THE principle of a three-term session has been approved by the university authorities of Edinburgh and Glasgow, but in Aberdeen the proposal has met with much opposition. At the last meeting of the Council a motion was carried in favour of delay in regard to the question, and a special committee was appointed to make exhaustive inquiry into the whole subject of the Arts curriculum. This is generally regarded as putting off the three-term session until the Greek kalends. No great regret need be expressed at such a decision. Each district has its own problems and difficulties, and it is impossible to meet them with a uniform solution. Edinburgh and Glasgow Universities may find salvation in a three-term session, but so may Aberdeen and St. Andrews in a two-term session. In any case, it will be interesting to see the two principles working side by side, and see which, if any, will first cry "Hold, enough."

AT the last meeting of the Medical Council it was agreed to accept the Intermediate Certificate of the Scotch Education Department as qualifying for entrance to the medical profession. This decision, in view of the standard of the Intermediate Certificate, can only be regarded as an extraordinary and unfortunate one. This certificate can be obtained by pupils 14½ years of age. That is to say that it marks a stage of education only half a year beyond the compulsory age. Further, there is nothing in the certificate to indicate in what subjects the pupils have reached a satisfactory standard, and it is well known that the certificate has been obtained by pupils who passed in only one or two subjects of their curriculum. If this standard is accepted by the Medical Council, then entrance to their profession is made very easy.

MR. JOHN KING, director of studies to the Edinburgh Provincial Committee for the Training of Teachers, has just issued a report on the reorganisation of the training colleges and the present position of the training centre. There have been enrolled for the session a total of 769 students, 171 men and 598 women. Of these, 123 men and 252 women are receiving their academic training in the university. It is very satisfactory to find that not a single complaint of over-pressure has reached the medical officer or any other official of the college. This result seems to be a sufficient answer to those who contend that the present scheme of training places an intolerable strain upon the students. Mr. King is to be congratulated on the highly satisfactory nature of his first report.

THE annual meeting of the Association of Teachers in Secondary Schools was held in Edinburgh on November 23rd. The address of the retiring president, Mr. Charles McLeod, of Aberdeen Grammar School, was notable for

its able and timely plea for co-operation and unity among the different classes of teachers. The extraordinary power and influence of the National Education Association of the United States are due to the fact that it is representative of every grade of the teaching profession, from the humblest rural teachers to the principal of the greatest university. In this way there is brought to the conservation of the interests of each class the strength and influence of the whole body, while education benefits enormously from being considered from a general instead of a sectional point of view. Scotsmen, in education as in theology, are peculiarly liable to the dangers of schism and to the weakness that flows therefrom.

IRISH.

RUMOUR has for some time been busy with Mr. Birrell's scheme for the solution of the Irish university question. It is known that he has been anxiously trying to find some way to please all parties; in fact, he has publicly stated that no scheme would be introduced into Parliament which was not already assured of general support, and he has staked his political reputation, so far as Ireland is concerned, on his forthcoming Bill. An authenticated statement of the lines on which the Chief Secretary is proceeding was made by the Provost of Trinity College at a dinner in Manchester of the Dublin University Association of the North of England. From this it is clear that Mr. Bryce's scheme is dead. To placate Trinity College, there is to be no interference with its constitution and endowments. Thus assured of its position, Trinity College will offer no opposition to the proposals, which are: (1) that Queen's College, Belfast, be raised to the status of an independent university, and (2) that a new college—the atmosphere of which will be Roman Catholic—be established in Dublin, and it, with the Queen's Colleges of Cork and Galway, will constitute a teaching university under a remodelled Royal. All these colleges are to be technically free from denominational tests; but the weak point of the scheme is that it will tend to throw Irish university education into three separate religious camps, the Royal being Roman Catholic, Belfast Presbyterian, and Trinity Episcopalian. Trinity College has been, and is, very anxious to avoid being connected with any denomination, aiming to be, like Oxford and Cambridge, free to all. She may be able to achieve this result if, with her commanding position and her honourable traditions, she still continues to offer the best education.

MR. BIRRELL made a political tour late in November through the north of Ireland, dropping *obiter dicta* by the way. These have, unfortunately, not always been happy. Everyone was delighted to hear that he hoped to solve the university question, and that, besides the increased grant for the buildings of primary schools, the salaries of national teachers are to be put on a more satisfactory basis; but in dealing with intermediate education he was hopelessly at sea. He described it as being "a system of cram, cram, cram, divorced from teaching." It is not surprising that this has evoked vigorous protest, the system of examinations employed being largely based upon composition and unprepared translation in all the languages, which confessedly demand good teaching, and upon mathematics, which are supposed not to admit of cram, while in experimental science there is no examination, but only inspection. The system is far from perfect, but was improved in 1901, and its chief defects now are a dual and inconsistent control, a cramping curriculum, an absence of general inspection, and an insufficient and diminished school grant payable upon a generally condemned principle, the result of which is much incompetent, because miserably paid, teaching. Unfortunately, Mr. Birrell, in spite of his condemnation of the system, holds out no hope of reform; he says it must wait. The pity of it! when there is practical unanimity as to what changes are required, and their introduction would meet with the slightest opposition.

THE Intermediate Board of Education has for once published the reports of the examiners (for 1907) at a reasonably early date. The pamphlet of seventy-four pages is larger than usual, and by being issued in the middle of November (Thom and Co., Abbey Street, Dublin, post free, 5*d.*) offers to teachers the opportunity of profiting by its criticisms in the current year. These show, what has been stated above, that there is a good deal of inefficient teaching, especially in the lower grades. This is plain from two facts. First, in subjects which are taken by the more select candidates, like Greek and German, the examiners profess themselves as well satisfied with the results, while in subjects like Latin and French, which are taken by a large majority of the candidates, the verdict is far less favourable. And, again, throughout the reports the work in the preparatory and junior grades is much more unsatisfactory than in the middle and senior grades, *i.e.*, the teaching in the lower classes is less efficient.

THE French examiner, however, is very scathing on all the work, and as by the new rules for the current year candidates must pass in two languages other than English, one of which will certainly be French for a large number, it is worth while to quote some of his criticisms. He says: "With a few brilliant exceptions, the general result is unsatisfactory, *e.g.*, composition weak; prepared books unprepared; literature mere 'psittacism.' The whole work, representing 11,254 candidates, might be roughly classified as follows: 50 per cent. of no value, 30 per cent. moderate, and 20 per cent. good and very good." "Eighty per cent. of the preparatory grade students do not know the French for 'Good morning.'" The examiner in arithmetic and algebra is at pains to summarise the prevalent defects, some of which, it may be added, are not limited to mathematical subjects. They are: (1) slovenliness; (2) a want of intelligence in interpreting simple statements; (3) want of intelligent anticipation; (4) carelessness in reading questions; (5) confusion between lineal, square, and cubic measures; (6) stupidity in adding or subtracting recurring decimals; (7) wrong meaning attached to "present worth"; (8) inaccurate calculation. There are serious complaints of the spelling, especially of technical words in common use. The whole pamphlet deserves careful attention.

IT is interesting to compare with Mr. Birrell's slashing onslaught on intermediate education the statement of his subordinate, Mr. Russell, the new vice-president of the Department, on the work of the technical branch, which falls roughly into two large divisions, one embracing the Department's relations with the secondary schools of the country, the other including its direct operations as well as the work administered through local authorities. On the work of the first division—that of secondary or intermediate schools—he remarked that the progress made has been very gratifying. Suitable science laboratories have been provided in more than 250 secondary schools, last year more than 14,000 pupils were under instruction in experimental science and drawing, and everything points to the soundness and value of this work. The work in the second division is suffering from lack of funds. Every county now has a scheme of technical instruction, and while six

years ago there were no technical schools outside the six county boroughs, almost every town with a population of more than 2,000 has a school to-day attended by large numbers of earnest students.

WELSH.

AT the meeting of the Court of the University of Wales at Aberystwyth, a report was presented from the Examining Board in Latin, showing that difficulties are felt from the very large number of scripts to be examined in the degree examinations. Thus the external examiner marked 575 scripts and his assistant 550; the internal examiners at Aberystwyth, Bangor, and Cardiff, 576, 466, and 430 respectively. It must be remembered that these scripts have to be marked to time. The matter was referred to the Executive Committee of the Court. Another point of interest in the report of examiners was the fact that the number of B.A.'s appears to be coming down whilst that of B.Sc.'s is going up.

AT the same meeting of the Court of the University attention was directed to the fact that French almost monopolises the field of modern languages in the University. It was felt in the Court that if the science work of the University is to be properly developed, everything possible must be done to encourage a working knowledge of German amongst the students. It was pointed out that, for commercial purposes in South Wales, a knowledge of Spanish is becoming increasingly important. Eventually it was decided to refer to the Executive Committee of the Court the consideration of German, in consultation with the Central Welsh Board and the Board of Education, so as to include in the reference the question of school instruction in German preparatory to the university courses.

THE Committee of the Guild of Graduates of the University of Wales has recommended that the first fellowship of the University, which shall be awarded for Welsh, be awarded to a student who shall devote his time to the collection of material for the publication of a Welsh dictionary.

PROF. ANWYL, the chairman of the Central Welsh Board, spoke in glowing language at the prize distribution of the Abergele County School. He said: "If all concerned co-operate heartily, the Welsh intermediate system, successful as it undoubtedly is, will attain to heights of success greater still, and enable the University of Wales, which is now mainly fed by students from the county schools, to rise to an unexampled pinnacle of fame. So far as the Central Welsh Board is concerned, it will not rest content until the secondary system of Wales is unquestionably the finest in the world."

ON the next day the Bishop of St. Asaph trenchantly criticised the Welsh intermediate system. He states that each scholar costs the public nearly £20 a year. Yet this interest in secondary education does not lead to the better payment of the elementary teacher, or better provision for the elementary school, from which, for the most part, the secondary pupils come. He makes the following serious suggestion: "I do not hesitate to say that at the present time we are paying for the education of children in our secondary schools of whom it may be said that it would be better for the community and for themselves that they should be in elementary schools." One of the headmasters has written to a newspaper to supplement the Bishop. He says: "In view of the extreme difficulty headmasters find in keeping up anything like a true secondary-school standard owing to lack of funds, it is pitiful to hear the reiterated fallacy that the system is justified by the thousands who flock to such schools for the sole reason that they are cheap." Of course, the real question is whether the Welsh intermediate system accomplishes as much as is possible within its financial resources—and there can be little doubt that the results are highly creditable to the Welsh people. But they have still to learn, as, indeed, have all nations, that sound secondary education, with the highest aims and right conditions, cannot be carried out cheaply. It must be costly—more costly than the popular mind as yet can understand.

A NORTH Wales branch has been formed of the Mathematical Association for the discussion of mathematical teaching in the schools, in view of the numerous recent changes in the methods of teaching elementary mathematics. Such a society should prove very useful, and it is to be hoped similar branches will be established in central and south Wales respectively.

THE Welsh Department of the Board of Education has issued a special report on the arrangements made in the different counties of Wales and Monmouthshire for providing a suitable preliminary education for teachers in public elementary schools. There is an interesting introductory note by the secretary to the Department (Mr. A. T. Davies), in which he says: "The problem is one of the most difficult and the most fundamental which educational administration, whether national or local, has to face, and would by itself, even were there no other reason, render necessary the closest correlation of what is ordinarily called 'elementary education' with what is ordinarily called 'higher education.' It is impossible to build up a satisfactory structure of higher education except upon a sound foundation in the elementary schools, and it is impossible to establish sound elementary schools unless teachers are available who have themselves had the benefit of a satisfactory system of higher education." The report gives full details of the present arrangements for teaching the pupil teachers in the county schools in Anglesey, Carnarvonshire, Denbighshire, Flintshire, Merionethshire, and Montgomeryshire.

RECENT SCHOOL BOOKS AND APPARATUS.

Classics.

The Annals of Tacitus. With Introduction and Notes by Henry Furneaux. II. Books XI.–XVI. Second edition, revised by H. F. Pelham and C. D. Fisher. 150+520 pp. (Clarendon Press.) 21s.—This book is too well known to need a detailed review. The historical part was revised by Prof. Pelham before his death; the notes have been in the hands of Mr. Fisher. While the total amount of the notes has decreased, by a number of omissions, there have been also considerable additions. The text has been brought into agreement with the text given in the Oxford Bibliotheca, and this has made necessary some changes in the critical notes. Unfortunately, the revision of the notes has not been done with sufficient care: there are a number of printer's errors or other corrigenda which have not been corrected, and the references do not appear to have been verified. The index does not include the first volume.

Elegeia, Passages for Latin Elegiac Verse. With Hints and English-Latin Gradus. By C. H. St. L. Russell. xii+306 pp. (Macmillan.) 3s. 6d.—This book contains 217 pieces of poetry for translation, a good selection, amongst which we perceive some that have figured before

in books of the same sort; most of them have references to the introduction, where various hints (54 pp.) are given to make the work easier. The value of the book must depend on these hints, and we do not think they are adequate. For instance, what will the puzzled boy make of this: "Take any word of the English, substantive, adjective, or verb, and turn it into any part of speech and any case or (allowing for the historic present) almost any tense likely to be of use; then alter the rest of the English to suit your altered word." It is quite easy to state the main principles of the elegiac style, which should be illustrated by plenty of examples; but here we find a principle ("co-ordination") equated as a main heading with such others as The Parts of Speech; Case, Tense, Apposition; Number, Age, Time, Night, Day, &c., and so on. We have noted many other points for criticism, but there is not space here to give them; there is a lack of order and proportion in the plan. The gradus ought to be in a separate book; it is very awkward to be turning ever to the end. We agree with the compiler that a gradus is desirable, but that admirable book, Quicherat's "Thesaurus," seems to us to meet almost every want. The first exercises, giving one idea for each line, are most useful, and their number might have been increased with advantage.

Demosthenes, Philippics I., II., III. With Introduction and Notes by G. A. Davies. xxxvi+126 pp. (Cambridge University Press.) 2*s.* 6*d.*—If it be granted that a school book is the right place for a long historical introduction it must be admitted that Prof. Davies has done the work well. We believe, however, that this information ought to be got by a study of the history book, and only a paragraph or two to be added to fix the place of the speeches in their setting. With a similar reservation, the notes are also good. They contain a great deal of sound scholarship, only they are, as usual, so full that they distract attention from the text. The frequent tags of translation are a mistake, as we become more and more convinced with wider experience. The book is likely to be very useful to those who are preparing for examinations.

Aeneae Facta et Fata. A stepping-stone to Virgil with notes and exercises on the text for the use of beginners. By Prof. E. V. Arnold. 160 pp.; illustrated. (Dent.) 2*s.*—Here is another book which deserves attention. The editor has studied educational needs, and he has set himself to meet the pressing want of simple texts for beginners. The first result is to be seen in this book, which contains the substance of "Aeneid," I., II., and IV. in 1,010 lines. The book also supplies vocabularies, indexed, and some grammar. The method in which the work is carried out is, unfortunately, not so good as the idea. The book is overburdened with extraneous matter. There are, to begin with, long lists of words without meanings, arranged according to form; then nearly forty pages on the "language and metre of Virgil," including vocabularies, exercises, declensions, and syntax. Next comes the text, in short paragraphs, each with a heading, and interspersed with pictures. Last come analyses and conversations, and the Latin index. Now what is needed is the text, or rather a series of texts, adapted to the early stages of Latin work; the grammar and so forth is best kept to a handy manual. We hope Prof. Arnold will reconsider his plan, and produce what the schools are waiting for.

Cicero in Catilinam, III. and IV. With Notes and Vocabulary by R. Harvey. xvi+68+62 pp. (Arnold.) 1*s.* 6*d.*—It is a common belief, but mistaken, that a special vocabulary makes the translation of a book easier. It is a mistake because it assumes that the learner finds out the meaning of a word sooner and more accurately. As a matter of fact, he takes quite as long to turn up the word, and if he saves a few seconds in identifying the meaning, this is lost again because he has to close and open his text every time. There is very little educational value in dictionary work, and it is better for his master to tell him the chief new words; for the value of the work depends on the treatment of the text when the words are known. We regard therefore the presence of a vocabulary as an error of judgment. Another and even more serious error is the mass of unnecessary notes. That, for instance, on *restitutam*, p. 17, with its parallel, is worse than useless; other such are the bits of translation which meet us on nearly every page. It is a thankless task to repeat this criticism, as we have to do, for almost every book that comes under our notice.

Tales of Troy and Greece. By Andrew Lang. xii+288 pp.; with 17 illustrations. (Longmans.) 4*s.* 6*d.* net.—This is a truly delightful book. Most of it is occupied by the story of Ulysses; the rest is the Fleece of Gold (why not the Golden Fleece?), Theseus, and Perseus. Not only is the story told well in simple language, but descriptions are given of customs and costumes taken from the discoveries of Mycenae and Crete. Here we are on debatable ground; Mr. Lang is clever enough to avoid offence. He follows the authorities carefully in his story, but he is never pedantic nor yet aggressively archaistic. The book is a success, and may be recommended as a gift-book or prize.

Illustrated Cameos of Literature. Edited by George Brandes. *Aristotle.* By Fritz Mauthner. Translated by C. D. Gordon. 112 pp. (Heinemann.) 1*s.* 6*d.* net.—"A superstitious worshipper of words, such as no great thinker is": here is a phrase near the beginning of this essay which may show the spirit in which the author approaches his subject. The supposed influence of Aristotle through two thousand years is a delusion; each age only set forth its own ideas under his name. He allows Aristotle, however, to be the father of logic, but in the same breath adds that "the few really eternal laws of logic are paltry concerns, such as $a=a$." Even as "the great compiler" Aristotle has small claims on our respect. The book is illustrated by a number of cuts of marvellous animals and monstrosities and incorrect maps to show what a fool he was. Nobody would wish to say that Aristotle knew as much about nature as a modern scientific man, but someone must make a beginning, and the modern inquirer would be nowhere but for the mistakes of his predecessors; allowance ought to be made for the lack of all facilities and of recorded experiments. The whole book is a one-sided attack on Aristotle in every capacity, and consists of truth distorted out of proportion.

Bell's Concise Latin Course. Part ii. By E. C. Marchant and S. E. Winbolt. xii+180 pp. (Bell.) 1*s.* 6*d.*—This book is so far in advance of others that it bases its exercises, not on accidence, but on syntax. A brief summary of accidence and syntax is prefixed, and the book begins with exercises recapitulatory of the first part, both in the Latin and the English part. The exercises are readable and intelligent. The editors take credit to themselves for preaching up country life, but excuse themselves from the duty of advocating compulsory military training by the "poverty of the Latin tongue." They are very easily discouraged: *dulce et decorumst pro patria mori; nemo est quin debeat patriam defendere.*

Geography.

Geographical Diagrams. By H. J. Snape. Questions, Statistics, Tables, and Maps. (Black.) 1s. 4d.—The title of Mr. Snape's book explains the whole scope of the work. Some 120 diagrams and maps have been collected together; questions on them are asked; data are given to encourage the student to draw other diagrams. Everything is in plain black and white, and of a nature simple enough to enforce general principles without insisting upon multitudinous details. The publications cited as originals used in the compilation or copying of the maps and diagrams are unimpeachable—witness such authors' names as those of Mill, Herbertson, Mackinder, and Scott Keltie. Some of the compilations are in our opinion unsatisfactory. An orthodox triangle, for instance, marked off to show the zones of vegetation on a tropical mountain, is well enough, but it is a serious omission to leave out all indication of the heights at which the changes may be expected to take place. Again, sections across country are useful for reading relief maps, but the vertical heights should not be exaggerated up into the regions of the ridiculous. It is an excellent plan, too, to show railways on a relief map, but the map should be large enough to make plain the connection between mountain pass and lines of communication. "Economic" maps—say, simplifications of types such as those in Bartholomew's recent publication, "The World's Commerce"—are useful, but mere labelling an outline map with names of "products" satisfies neither the eye nor the understanding. Explanatory tablets on population maps should have the same values; in maps of the British Isles, if ■ means "2,000 to sq. miles" (*sic*) in one place, it should not mean 400 in another. Notwithstanding these criticisms, the general result is, we think, a useful book for *exercise* work in the hands of an expert master. Whether it is advisable for the pupil to have all these diagrams thrown at him cut and dried is another question. It is a little like putting the cart before the horse. We prefer to lead up to them bit by bit, and let each diagram *gradually* grow into the listener's mind by the agency of the blackboard.

Mathematics.

Trigonometry, Theoretical and Practical. By R. C. Bridgett and Wm. Hyslop. xvi+386 pp. (Blackie.) 4s. 6d.—In the sequence of its chapters, as is noted in the preface, this text-book does not differ greatly from existing text-books. Considerable attention is given to the drawing of figures as a help to the clear understanding of problems and as a check on numerical work, and practical exercises involving outdoor work are suggested. Graphical methods are freely used both to represent the variation of functions and to obtain the solutions of equations. The older geometrical method of establishing the addition theorem is employed; this method has certain advantages, but we think that the proof by projection is so much more fundamental, and the properties of projection so generally employed in later mathematical work, that the pupil should be introduced to it at an early stage. The last two chapters treat of De Moivre's theorem and the expansions of $\sin\theta$ and $\cos\theta$; it is difficult to treat expansions properly without taking up the question of infinite series, and the discussion given can only be accepted as an introduction that leaves a good deal to be supplied at a later stage. The book is provided with numerous examples, and appeals to the pupils who have difficulties with purely theoretical work, while at the same time it contains ample store of exercises to enable the average pupil to obtain a good working knowledge of trigonometry.

Geometry of the Conic. By G. H. Bryan and R. H. Pinkerton. xi+270 pp. (Dent.) 3s. 6d.—The need of familiarity with the leading properties of conic sections on the part of students of mechanics and physics is beyond question, and the analytical treatment of these curves is too often an exercise in algebra rather than a discussion of geometrical properties with the help of algebra. There seems no reason why a good knowledge of the geometrical properties of conics should not be obtained by analytical processes, but undoubtedly there is too much reason for believing that the usual analysis requires to be supplemented by a treatment more akin to that of elementary geometry. This text-book contains a simple and, for ordinary purposes, sufficiently complete discussion of the properties of conics on geometrical lines. Great care has been taken to emphasise the properties common to the three species of conics, and every reasonable help is given to the student to obtain a sound knowledge of the subject. In the last chapter geometrical discussions are given of various curves that are not usually found in elementary books; the treatment shows great freshness, and is thoroughly interesting, while at the same time it illustrates processes that are of fundamental importance in kinematical studies.

Elementary Statics. By W. G. Borchardt. viii+398+(Answers) xx pp. (Rivingtons.) 4s. 6d.—An excellent feature of this text-book is the large amount of experimental work of a simple kind that forms an essential part of the course of instruction laid down. The least satisfactory part of the book is, as might be anticipated, the introductory chapter, which deals with the general conceptions of matter and force; the simple experiments described are good and appropriate, but there is a brevity in the later sections of the chapter that will demand some careful exposition on the part of the teacher. After the first chapter, however, the treatment is exceedingly simple and clear; the experiments described and the numerical and graphical examples worked out in the text should be amply sufficient to give sound ideas of the fundamental principles. In addition to the subjects usually discussed in elementary books, the principle of virtual work, a discussion of frameworks, and a sketch of the simpler aspects of elasticity are included in the development here given. The exercises are very numerous, and do not demand, as a rule, any mathematics that is beyond the average schoolboy towards the end of his school course.

Strength of Materials. By William Charles Popplewell. x+180 pp. (Oliver and Boyd.) 5s. net.—It is stated in the preface that this book is intended for the use of those students of engineering who are desirous of obtaining a working knowledge of the fundamental principles involved in problems of machine and structural design. The style in which the book is written is simple; the mathematical knowledge demanded in the more analytical parts is not extensive, only very easy calculus being required; there is abundance of thoroughly practical numerical examples, and the results and methods of experimental investigations are briefly but clearly expounded. For students preparing for examinations such as those conducted by the Board of Education, the collection of questions at the end of the book will be useful. The numerous diagrams contribute considerably to the easy understanding of the text.

The Victoria Matriculation Papers in Mathematics and Mechanics. By F. A. Bruton. 198 pp. (London: Sherratt

and Hughes.) 2s. net.—This collection contains, in addition to the papers in mathematics and mechanics from 1894 to 1907, the higher alternative papers for 1906 and 1907; up to 1899 only the June papers are given, but from 1900 onwards nearly all the papers set in each year will be found. Answers are provided, and in some cases of approximations fully worked solutions are added. Besides the papers set at the examinations, there are various book-work questions for revision and additional examples for practice. The collection should be useful, not only to teachers who send pupils up to the Victoria examinations, but to others who wish to secure variety in their class-work.

Book-keeping Down to Date. By Andrew Munro. Fourth edition. 336+ (appendices) xxx+xviii pp. (Effingham Wilson.) 2s. 6d. net.—An earlier edition was noticed in The School World, vol. viii., p. 68. The numerous additions, treating of such subjects as the new Finance Bill and the new regulations for income tax, increase the value of what was always a good book.

Mathematical Tripos. Part i. Specimen Papers. (Cambridge University Press.) 6d.—These papers have been prepared at the request of the Special Board for Mathematics, and approved by them; they give a general representation of the kind of examination contemplated by the Board under the new regulations. The papers will be read with interest by those who have gained their degree, as well as by the present undergraduates.

Cardboard Modelling. By Albert Sutcliffe. Second edition. (Philip.) 2s. 6d.—The scheme embraces thirty-two models, the first twenty of which are of an easy character suitable for children. The diagrams are excellent, and the instructions are clearly stated. The work seems to be thoroughly suitable for the purpose for which it is designed, and should be very serviceable in promoting an interesting and educative discipline.

Science and Technology.

A History of Chemistry. By Dr. Hugo Bauer. Translated by R. V. Stanford. vii+232 pp. (Arnold.) 3s. 6d. net.—This short history is intended to supply students of chemistry with an outline of the general developments of the science. As an attempt is made to cover the whole range of chemistry in a little more than 200 small pages of large print, the result is, necessarily, a rather scrappy treatment of the subject. On this account it is doubtful whether the book is likely to be of much service to the class of students for whom it is primarily intended—those who are just taking up the study of chemical history. No subject is more difficult for beginners, and for its proper understanding a much more detailed treatment is necessary than is here given, supplemented by frequent reference to the original papers. Several misstatements occur. Lavoisier's "first chemical work" (p. 96) was not performed in 1770, nor did it consist in an attempt to prove that the earth formed when water is boiled does not arise from the water but from the glass; the first chemical paper of Lavoisier, published in 1765, was his important "Mémoire sur le Gypse," in which the nature of plaster of Paris was first elucidated. Mayow (p. 76) did not call nitrogen "nitrous air," nor did Scheele call the same gas "mephitic air." The statement that Scheele's starting-point for the preparation of oxygen was manganese dioxide is likely to convey a wrong impression of the facts. The discovery of thallium is attributed to Mosander, who is said to have found it in "the earth from Ytterby." In dealing with recent work, Dr. Bauer has in several instances given priority to German workers and overlooked the rights of English chemists; notably is this so in the case of the centric formula for benzene, the optically active derivatives of nitrogen, and in discussing tautomerism. Such errors might well have been corrected by the translator.

Electric Light and Power. By E. E. Brooks and W. H. N. James. 372 pp. (Methuen.) 4s. 6d.—We shall always have with us a more or less numerous body of technical students who, provided with an insufficient preliminary education, desire to obtain a considerable knowledge of applied science based upon a minimum knowledge of fundamental principles. These conditions have to be faced, and provision must be made for such teaching. This volume represents a preliminary course of electrical engineering, and it assumes no knowledge of mathematics, chemistry, or general physics. A brief glance suffices to show that the student will not proceed far through the volume without the aid of a little mathematical and chemical knowledge. The technical portions of the subject are treated in a satisfactory manner, and the illustrations are numerous and good; but the preliminary chapters on first principles are all too brief, and a first-year course might well be restricted to a more complete study of this part of the subject.

The New Matriculation Heat. By R. W. Stewart. 276 pp. (Clive.) 2s. 6d.—Provides a satisfactory course of instruction in heat so far as may be required by the London University matriculation and other similar examinations. Full instructions are given for many experiments, most of which can be carried out satisfactorily with simple apparatus. The author rightly discourages the use of formulæ in the earlier chapters, and the student is instructed how to calculate results from first principles. A chapter on "Approximations" will be most useful to the elementary student, and all teachers of physics would be glad to save the time which has to be spent in making the student realise that a numerical result should not be expressed to more significant figures than the method justifies. It is gratifying to find that the author has adopted the "constant volume dilatometer" to show the anomalous expansion of water. A preliminary experiment (p. 54) to show the same effect might have been omitted; for, even if a 50 c.c. flask fitted with a tube of 1 mm. bore is used, the apparent movement of the water column is so slight that an inexperienced observer might easily fail to observe the phenomenon.

A Simple Course of Weighing and Measuring, including the Metric System. By H. J. Ashton. 104 pp. (Philip.) 1s. net.—This manual is intended to assist the student in applying the rules of arithmetic and mensuration in a practical manner to the needs of everyday life. The first paragraphs introduce the novel assertion that all our English standard weights and measures depend ultimately upon the mean solar second as a unit of time, since, from this, we can ascertain the length of a pendulum which will vibrate seconds exactly (viz., 39·14 inches), and the *yard* is defined to be in a certain proportion to this, viz., 36 inches! The unfortunate student is not reminded that the length of the seconds pendulum depends upon the latitude, and that it has the above length only at the latitude of Greenwich. A short chapter on the elements of land surveying is the most interesting portion of the book. The treatment of the subject, as a whole, is scarcely suited to the requirements of a class-room.

Higher Text-book of Magnetism and Electricity. By R. W. Stewart. Second edition. 744 pp. (Clive.) 6s. 6d.—An extra chapter, on the electron theory of matter and radio-activity, prepared by Mr. J. Satterly, is included in this edition. This chapter consists of four sections, on cathode rays, electricity and the ether, conduction of electricity through gases, and radio-activity. These matters are treated in a clear and interesting manner, and their insertion adds much to the usefulness of the volume.

Pedagogy.

Selected Writings of Thomas Godolphin Rooper. Edited, with a Memoir, by R. G. Tatton. xciv+293 pp. (Blackie.) 7s. 6d. net.—Rooper was not a man of first-rate abilities. He obtained prominent distinction neither at Harrow nor at Oxford. He was neither graceful nor eloquent as a public speaker. Yet teachers whose work he appraised respected and admired him; those who were privileged to know him loved him; those who worked with him and became familiar with his thoroughness, his generosity, and his unremitting self-sacrifice, found him an inspiration, a continual incentive to higher effort, and an unconscious source of reproof when they offered anything but their best. Rooper's life—though to some it may appear truncated, incomplete, prematurely closed—is permanent testimony to the truth that it is not only those who are endowed with ten talents who accomplish great things and leave the world better for their sojourn in it. His training was on classical lines, and he was destined originally for the Church; yet, so catholic were his sympathies, so painstaking the way in which he prepared himself for the duties he had to meet, that his most valuable work for English elementary education was his advocacy of the claims to an important place in the curriculum of simple observational science, hand and eye training by manual exercises, and, for rural schools, practical work in the garden. One of the secrets of his success—and of this Mr. Tatton's memoir contains abundant evidence—was his modesty and his determination to learn something from every person with whom he came in contact, whatever his position might be. The volume will act as a tonic and a comfort to all teachers and inspectors who read it.

Miscellaneous.

The Complete Air-gunner. By R. B. Townshend. 88 pp. (L. Upcott Gill.) 1s.—The increased interest which people have taken in rifle-shooting since the South African war has produced many books on the subject, but we do not remember to have seen one so eminently suited to the instruction of the beginner as this volume. Anyone who did not know one end of a rifle from the other, and had six yards of back-garden available, could teach himself by the aid of this book to become a very fair shot. It is intended primarily for the family, but anyone who is interested in the teaching of shooting will find many hints to assist in commencing a rifle club on the smallest scale. The author gives us a good deal of detail about the air-gun, and points out the difficulties which had to be overcome in constructing an accurate weapon; but he does not end there; he is a big-game shot who has been out after grizzly bear, and shows us the air-rifle as an introduction to the miniature rifle, and the miniature rifle as an introduction to the service arm. Many big-game shots speak disparagingly of the Bisley marksman with his paint, vernier, and orthoptic, but Mr. Townshend is none of these; he tells us a story of the Bisley marksman who silenced a pom-pom at Paardeberg, and "study the rifle from every point of view" is the moral of his book. But let no one think when he can make his possible with any of the above-mentioned three weapons that he has exhausted the possibilities of the air-gun; let him study Mr. Townshend's mechanical horse and his moving targets, and enjoy the luxury of a buffalo hunt in his back-garden. The book is well got up, and the illustrations are admirable—altogether an excellent shillingsworth.

Modern Going to Sea. By John Macnab. iv+105 pp. (Philip.) 1s. 6d. net.—This new edition of a book which met with a favourable reception twenty years ago should serve a very useful purpose to-day in acquainting boys who want to go to sea with the best way to proceed, and in giving them a plain statement of what to expect. Commander Macnab writes with a wide experience behind him, and the parents of future sailors would do well to study this volume.

The "Erectnek." Devised by Arthur Englefield. Size, 14½ in. wide by 11 in. high. (A. Englefield, Longford, near Gloucester.) Plain wood, 5s.; oak, 6s. 6d.; oak polished, 7s. 6d.—In May, 1905 (vol. vii., p. 197), we described in appreciative terms an ingenious table-rest or drawing-book frame devised by Mr. Englefield. The object of the appliance is to prevent injury to the eyesight and spine caused by children reading and writing with their books in bad positions. Mr. Englefield has improved the form of his device since 1905, and its usefulness for the purpose intended has been correspondingly increased. The "Erectnek" reading-stand may be obtained in sizes varying from 11 in.×7¾ in. at 2s. 6d. in plain wood to 30 in.×21 in. at 21s. in polished oak. An auxiliary ledge is also now available to hold a book or copy at the top of the writing slope. As to the ill-effects of bad positions of reading and writing upon the health and eyesight of children, there is only one opinion. The "Erectnek" is a simple appliance suitable for use on any desk or table, by means of which these defects can be remedied. It is a combined reading-stand, writing-desk, and table-easel, designed on scientific principles, simple in construction, and with nothing to get out of order. For the home or for the school in which the health of the body and mind is given serious consideration, the appliance provides a means of counteracting a bad and prevailing tendency among children, and its use should be warmly encouraged unless some other equally efficient means of preserving correct positions in reading, writing, and drawing at desks are available.

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.*

Chemistry as a School Subject.

OUR best thanks are due to Prof. Cohen for starting this discussion. Many of us are not altogether satisfied with the courses of work for which we are held responsible. We are tied, of course, by some external conditions, such as the necessity for teaching simultaneously two groups of boys, one destined for Victoria and the other for London University. Both universities are most liberal in their offer of optional science subjects; but for practical purposes

the choice is restricted to chemistry when both universities have to be satisfied at once. Chemistry has now been taught in schools for so long that it is high time that some audit was made of the intellectual results which we either reach or fail to reach.

We may, I think, distinguish two or three stages of progress in a boy's school life, stages which I suspect are determined, not by the number of hours per week given to the study, but by the natural development of the brain and by the blood pressure characteristic of different ages. I suspect a physiological factor in growth which all methods, logical, historical, heuristic, &c., are powerless to contend against, and with which all methods are capable of co-operating.

I. In the lower stage (aged twelve to fifteen) boys seem extremely interested. They want to *do* things, to bend glass, make crystals, burn hydrogen. They imitate anything the science master does. They learn manipulations of all sorts with avidity—filtration, distillation, precipitation, &c. They acquire a good many facts, and easily forget them; hence their strange proposals for making oxygen from chlorate and sulphuric acid, or hydrogen from nitric acid and copper. Theory is quite wasted upon them; they may give lip-service to atoms and molecules, but these dogmas have no influence on their conduct. In this stage boys do not really experiment; the so-called "experiments" of the books are treated as cookery recipes. The word "experiment" is misused in speaking of the work in this stage.

II. Then there is a middle stage (aged about fifteen to seventeen) when they have acquired some mathematical power, when averages, percentages, decimals, and ratios are no longer troublesome. Exact measurement then becomes interesting. They show some initiative in designing details of apparatus and method. They carry out with great intelligence and eagerness any series of experiments the idea of which has been made clear by the teacher, but are still quite powerless to ask questions from Nature on their own account, although they appreciate the answers which they themselves can obtain to questions set by the master, when he also supplies hints as to the method of solution. It is still useless to say much about chemical theory, although the boys are quite anxious to learn chemical and other shorthands.

III. There seems to me to be a third stage (aged sixteen to nineteen) which we only just reach in some schoolboys before they go to college—a stage in which a vivid imagination of unseen structure prompts their questions and suggests and guides their experimenting. It is worth while comparing with these ages those given by Starbuck for religious conversion. This seems the right age for beginning chemical theory; and the idea that there are invisible causes working behind the visible phenomena adds greatly to the interest of their practical work. Dull boys never seem to reach this third stage, nor do young boys reach it simply by passing through the courses of the earlier stages. The teaching of chemical theory need not be dogmatic, and the boys will respond to any effort made to rouse their critical faculty and induce scepticism on such fundamental ideas as the equality of atoms. Until this stage is reached the boys seem unable to make much use of a laboratory in the absence of a master to supply them with ideas.

A. As well as reviewing these stages of intellectual growth, it is useful to consider the topics which provide most mental food. I question the usefulness of working systematically through the elements aluminium, antimony, arsenic, &c., either in alphabetical or any other order. It is true that this plan gives the class a most valuable sense of steady progress, but it does so by putting the emphasis on a monotonous series of things instead of on an inspiring series of ideas.

B. Great efforts are being made to show us how to convince boys that the hydrogen comes from the acid, that chalk contains a constant percentage of lime, that salt contains chlorine and so on. I confess that I regard all these hackneyed problems on chalk and zinc and salt as almost totally useless for teaching purposes. Our thoughts and those of our pupils are all hopelessly polarised on these topics. As a matter of practice, we cannot sterilise boys' minds in order to grow pure cultures of logical thought in them. It is better to encourage boys to read as many scientific books as they please. Carbide, petrol, oxygen, are now part of the daily language of boys. And then, of course, in school we take the propositions as read, and put the boys at once on to the riders. It is little use my setting boys to find the percentage of carbon dioxide in chalk. I am not really interested in their results except as illustrations of the theory of errors. At best their papers are marked, at worst they go into the waste-paper basket. But if I happen to want to know the composition of a certain magnesian limestone, then, of course, they must be kept working at the stone until their answers are beyond doubt.

C. One use of the study of chemistry is the sense that one gains of an order in chaos. At first to an inquiring boy everything is wild chaos. Gradually, bit by bit, little corners out of this chaos are redeemed into order. Sometimes he asks what would happen if a little of something out of every bottle in the laboratory were mixed together, and perhaps tries to find out for himself; ultimately he finds the answer to his question in the composition of sea water. It is worth while to gain this mental vision of order in what once seemed chaos, since other vast tracts of chaos still lie unexplored and close around us, and fill our minds with the sense of "mysteries, paradoxes, and perplexities."

Mystery and majesty there are in the universe. Magic and mystification have been offered to the young as the traditional methods of interpretation. We seek to lead them to the revelation of relentless research.

D. Something may be done to encourage the spirit of exploration, to organise exploration, and to make it systematic by the use of simple problems like: "Find the ratio in which a mixture of air and coal gas is most explosive"; "Find the effect of nitric acid of different strengths upon zinc"; "Under what conditions can vortex rings be obtained by dropping copper sulphate solution into ferrocyanide?" "What changes in colour occur when red lead and potassium chlorate are heated together?" It is astonishing how little idea boys have at first about arranging a systematic series of exploration experiments or devising the simplest apparatus in reducing a general question to concrete terms. I have just watched twenty-four boys who spent between one and two hours before any of them knew in what proportions to mix coal gas and air so as to get an explosive mixture.

E. As a preparation for chemical theory and for dealing with the invisible I have found it useful to lay some stress on the washing of precipitates. The boys see the white precipitate when copper sulphate and barium chloride are mixed, but are very slow to understand that, besides the visible precipitate, there may be invisible things present in solution. At first the visible seems to dazzle them into blindness of the invisible. After much wash-

ing and severe testing of precipitates they at last learn that a clean precipitate is not obtained by evaporating a mixture of two solutions to dryness. For the same reason in the mixing of coal gas and air the time spent in waiting for mixture by diffusion is instructive in emphasising the real properties of invisible things.

F. There is a use for the purely algebraical treatment of chemical equations such as $xZn+yHNO_3=$, &c., or $mK_2Cr_2O_7+nSO_2=$, &c., in working out the mathematical possibilities, and afterwards trying by experiment to find which, if any, of them is true. But it is very necessary to teach caution in the application of arithmetic to chemistry, and boys must, if necessary, be rudely shaken out of a complacent belief that 1 and 1 always make 2 by finding the volume of 100 c.c. water + 100 c.c. spirit, or measuring the density of saturated salt solution after mixture with its own volume of water.

G. In further preparation for molecular theory I have found it useful to dwell on the properties of sand and of lead shot, substances in which the mass is obviously composed of particles, and in which some of the properties of the mass (*e.g.*, its percentage air space) can be explained in terms of the properties of the particles.

It is, however, the kinetic theory of gases rather than the atomic theory of Dalton which appears to me peculiarly useful to the rising generation. In that kinetic theory, however inadequately treated, we can at least give them an outline of a theory for dealing with a human society of all sorts and conditions of men and women, moving in all kinds of directions on all sorts of errands and with velocities widely varied and infinitely graded—a general theory for dealing with social problems.

H. We probably all admit the reasons for basing our teaching on laboratory work rather than on text-books, and yet perhaps most of us still use text-books in our classes in apparent defiance of our principles. But I find certain minor practical reasons which assign a definite if limited place of usefulness to a text-book. There are a few minutes at the beginning of every lesson which may be saved if the moment boys enter the room they see "read page 141" written on the blackboard. The class settles promptly and quietly to work without waiting until the slowest boy has found his place, his books, and his pen. Again, at the end of the lesson those who have finished their notes find quiet employments until the bell rings. Sometimes there are no notes to be copied in evening preparation, and then a few pages of reading may be set instead; there are great advantages in leading a class to believe that the twenty minutes of science preparation twice a week will be regular, and not frequently omitted. For revision at end of term it is much easier for boys to go over old lessons in a printed text-book than in a written note-book. And, further, for boys of V. and VI. Form standard their rate of learning is so much more rapid than their rate of writing that it often seems best for them only to attend and not to take notes in school, and afterwards to read the lesson in a book. There is also a use in a text-book for older boys if four or five pages are regularly set every preparation night, in giving a momentum to the lessons and forcing a steady rate of apparent progress. The pedagogical theory books say the teacher, should always be bright and smiling and cheerful. We know the bitter truth; and in times of exhaustion and depression it is occasionally useful to have a clearly mapped course for the class to work at when we find ourselves quite incapable of originating any explorations of our own. But all this need not blind us to the more excellent way.

My chief feeling about school chemistry is much in agreement with Prof. Cohen's, that the subject-matter does not readily lend itself to the illustration of many scientific methods of the first importance. School science ought to be a wide as well as a thorough training in scientific method. Reference to "The Principles of Science" by Jevons, pp. 270 to the end, or to Whewell's "History of the Inductive Sciences," or to Merz's "A History of European Thought in the Nineteenth Century," will show at once how cramped our field of illustration is when we confine ourselves by the conventional boundaries of elementary chemistry as defined by text-books and examinations. Our right course is, I believe, to deny the reality, the authority, or the convenience of these alleged boundaries, and to maintain that the spirit of inquiry will grow most freely when quite unfettered by conventional restrictions. Such an attitude may be inconsistent with an educational world where the provinces of knowledge are neatly mapped on examination syllabuses, but it may be the examinations which need amendment. In any case, I welcome Prof. Cohen's proposal to take more note of the simpler branches of mechanics and physics, and would suggest that there are other scientific principles best illustrated by astronomy, by botany, and by other ranges of thought. But we shall hardly make the desired progress until we shatter the common idea that chemistry is a "subject" or any kind of an entity to which any natural boundaries can be assigned.

HUGH RICHARDSON.

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IN connection with Prof. Cohen's article, it has struck me that a word might with advantage be said with regard to the order of the sciences taught in boys' schools. The general practice is that physics and chemistry are the sciences considered to be of prime importance, and that the order of presentation is physics first, then chemistry. In Prof. Cohen's words, "It [science] is supposed to cultivate the powers of observation," and yet one does not find any of the purely observational sciences included in the curriculum. It seems to me that the logical order of study should be: (1) an observational science either alone or in conjunction with physics, and (2) chemistry. The observational science which lends itself best to school use is undoubtedly botany, and a year's strict *descriptive* work in this subject, framed with the aim of training observational power, would clear the ground for the observation of the more complex relations of chemistry. Botany—in contradistinction to what is known as nature-study—is certainly a powerful instrument lying practically idle and neglected in English schools for boys.

E. H. DAVIES.

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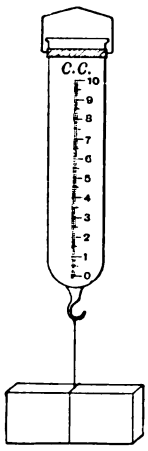
An Apparatus to Illustrate the Principle of Archimedes.

THE following method of illustrating the principle of Archimedes may appeal to science masters, both on account of its simplicity and its directness. The apparatus consists of a small graduated glass tube about half an inch diameter, and about 10 c.c. capacity. This can be suspended from the arm of a 250 gm. physical balance by means of a brass stirrup.

Before performing this experiment, the pupil will have seen, from some previous simple experiment, that when a body is immersed in a fluid, the fluid exerts an upward pressure on the body immersed. What he has now to find out is the connection between this up-thrust and the amount of fluid displaced.

A metal solid of regular form—cube, rectangular block,

or cylinder—is hung to the hook of the apparatus by thread or very thin wire, and the whole is counterpoised on the balance. A beaker containing liquid is then brought under the apparatus, and the metal solid allowed to hang in it in the usual way. Of course equilibrium is destroyed owing to the upward thrust due to the liquid pressure. By means of a small pipette, liquid is taken from the beaker and added to the tube until the balance is restored. This can be adjusted accurately by using a small piece of blotting-paper to take out excess of liquid. The volume of liquid in the tube is now read off and noted. The solid is then measured and its volume calculated. The pupil will then clearly see for himself that the amount of liquid placed in the tube to counteract the upward pressure of the liquid is the same as the volume of the liquid displaced, so that the upward thrust of the liquid on the solid is equal to the downward weight of the same amount of liquid that the solid has displaced.



The apparatus, which is being made by Messrs. Philip Harris and Co., Edmund Street, Birmingham, is such that pupils can perform the experiment as a practical exercise, and several liquids can be used in a single lesson, and the form of the solid immersed varied.

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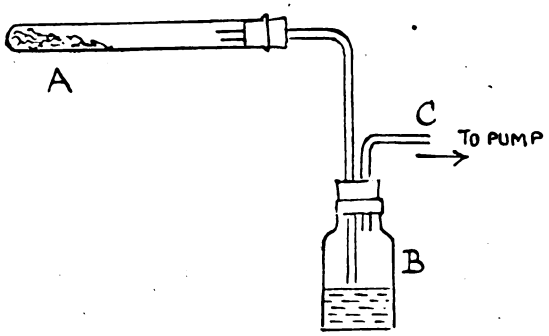
County School, Pembroke Dock.

Action of Heat on Chalk.

THE properties of chalk and of lime, and their relation to one another, afford a most instructive study; yet simple enough to be within the comprehension of comparative beginners in chemistry. One point, however, presents some little difficulty; viz. to demonstrate by actual experiment that chalk gives off carbon dioxide on heating. It is well known that at any given temperature equilibrium exists between chalk, lime, and carbon dioxide as soon as the pressure of the last reaches a certain maximum. In order that the carbon dioxide may be driven out of the vessel, and made to show its presence by lime-water, &c., it must have a pressure greater than 76 cm. of mercury. This requires a temperature of more than 800° C., at



which temperature (requiring a blow-pipe flame) even combustion glass is soft enough to yield to the pressure of the gas, and a hole is usually blown in the test-tube.

A test-tube of iron or copper may, of course, be used, but carbon dioxide coming out of an opaque tube is hardly as convincing as if everything is visible. A method of carrying out the experiment in a glass tube by driving steam into it (practically conducting a steam distillation of carbon dioxide) was contributed to your columns some time ago; but this requires great care in performance, and the use of the steam complicates the apparatus and tends to distract the attention of young students from the process actually under consideration. By making use of the simple arrangement in the illustration, the experiment may be easily carried out.

A is a test-tube of combustion glass, containing chalk.

B contains lime-water.

C leads to an air-pump, or, more conveniently, to an aspirating water-pump.

Either of these pumps easily reduces the pressure to such a value that enough carbon dioxide will be carried down into the lime-water to make its presence obvious, and this without requiring a greater heat than a dull redness. If the temperature goes much beyond this the glass softens and is pressed inwards. In case of any failure of the pump action, it is desirable that the longer tube should only graze the surface of the lime-water.

H. G. WILLIAMS.

Chemical Laboratory, Gordon's College, Aberdeen.

Preliminary Examination for the Certificate.

THE writer of the note in your issue of last November relating to the syllabus for the Preliminary Examination for the Certificate omitted to refer to two matters worthy of notice.

(i) For some years the science syllabus has been tinkered with, and, as it would seem, in sheer wantonness, for the changes involve no principle, and are merely the substitution of tweedledee for tweedledum. To publishers and authors of text-books the whole thing must be disheartening.

(ii) The new regulations for needlework make a practical exercise in "making or mending" alternative on the examination day with an exercise in cutting out. This is unsatisfactory. Cutting out is merely drawing to scale, and can be taught to boys as easily as to girls—it is no test of needlework proper. Again, the "making or mending" exercise can be learnt by rote, and does not test the economical, and therefore intelligent, use by the candidate of a limited quantity of material. The needlewoman is only properly tested by the sum of her ability in both directions, and each candidate should be required to perform both exercises on the examination day.

YORKSHIRE.

The School World.

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The School World

A Monthly Magazine of Educational Work and Progress.

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THE TRAINING OF TEACHERS—A PUBLIC DANGER.[1]

By Prof. H. E. ARMSTRONG, Ph.D., LL.D., F.R.S.

WE are told in the preface, that although designed to be a tool for the craftsman, for the teacher or the novice who is learning to teach in a primary or secondary school, it is hoped that this work will also possess value for the layman. As it is edited by the Professor of Education at King's College, London —who supplies the introductory section as well as one of the special sections—a layman like myself, seeking for instruction, naturally turns to it as an authoritative exposition of the tenets of the advanced modern school of professed methodists; it is somewhat disappointing, in the end, to be forced to the conclusion, that of all the contributors to the volume almost the only frank writer of sober sense in plain determinate English is a Churchman who presumably is not a Methodist.

In Part I (124 pp.), the editor deals with the subject of general method and curriculum. At the end of the first paragraph—in which the word knowledge occurs with suspicious frequency—we are told that the section (on mental systems) will be devoted to the consideration "of the psychological groundwork of the teacher's task as this is conditioned by the mind of the pupil." The subject-matter of psychology, we then learn, is "simply consciousness, a thing more easily indicated than defined." We pass, however, from this indefinable to the constituents of the indefinable and eventually through a rolling crescendo of technical terms to a grand finale of apperception and apperception masses.

All this must appear to the budding teacher to be most impressive and delightfully learned: but is it business—for whose benefit is it written? Very largely, I suppose, for those who are being bribed by county councils and in other ways to turn from careers for which they are suited in order that they may be manufactured into teachers —far too frequently, young women who in former days would have been housemaids and milliners and would have engaged in breaking crockery and other forms of harmless, useful employment but are now being set to spoil heads instead.

A book on the practice of instruction should be practical, not a mere didactic treatise in vague, high-flown, academic language. The embryo teacher of to-day needs helping by clear and above all simple precept and example *to do things*—not by bewildering phrases; he will only learn to talk big himself and to bluff if nurtured on such diet. "All criticism must be useless when the terms or grounds of it are in any degree ambiguous; and the ordinary language of connoisseurs and critics, granting that they understand it themselves, is usually mere jargon to others, from their custom of using technical terms, by which everything is meant and nothing is expressed."—So says Ruskin.

The medical man has an object in using a technical jargon—he is not anxious to inform the patient; but those who are training teachers need to set a different example. The *Times* has been eloquent of late on the failure of scientific workers to make themselves understood. There is little doubt that we do our best to make ourselves unintelligible; indeed, the state of meetings in the Tower of Babel was simple, we may suppose, in comparison with those now held, say at the Royal Society, especially when the biologists have command of the platform. And probably there is not a branch of instruction, at the present day, in which we are not aiming too high and obscuring the fundamental issues by presenting them in a hyper-technical phraseology.

It is authentically related of one of the great centres of pedagogic supremacy that when recently a teacher remarked to a girl pupil in training— "You really must think more about your work," she received the reply: "Please, Miss, it makes my head ache to think." And we know the anxiety of these bright young things "to have something dictated to them." They and all the other sweet innocents who are being trained as teachers need to have their mental systems developed rather than defined. But I willingly admit that professors of education are in a difficult position —they must talk and they have very little to talk about. Learning to teach, however, consists in learning to do; no amount of talking will make a

[1] "The Practice of Instruction: a Manual of Method General and Special." Edited by John William Adamson. 512 pp. (London: National Society's Depository.) 4s. 6d. net.

carpenter or a craftsman of any kind: indeed craftsmanship will never be acquired if the idea get abroad that it can come from anything but severe practice.

If I test the practical value to potential teachers of the section on general method in the case of a subject of which I may be supposed to know something, I am no more successful than when I consider the general character of the article. I find the "heuristic method" dealt with in about a page—surely it deserves more than this in a manual on the practice of instruction. In the first place, it is implied that here and in America the method has been adopted from Germany—which is incorrect. It is called "an extreme form of analytic procedure." Well, if the form of procedure adopted by the young child be extreme, it is! A grudging recognition of its value is given, however, in the statement that teachers must give scope for the employment of the method. But this is followed by several sentences which show that the writer has failed entirely to understand the proposals which have been made:

"Art is long and time is fleeting" and it would be unwise, if it were possible, to refuse to employ in the instruction of a child knowledge already garnered and ready for his use. The uncompromising advocates of a heuristic method ignore or treat lightly two facts which are of importance as parts of the teacher's problem. The first is the existence of an accumulated store of knowledge, into possession of which the child may enter without retracing all the painful steps of the discoverers. The second is the fact that discoveries are made at the price of much effort, some of which is more or less futile so far as positive results go; blunders mark the path as well as successes. Now the instructor is there to minimise futility of effort. Accordingly his use of the method of research must be a qualified one. He must make a careful selection of what is to be analysed and must so guide the analysis itself as to prevent divergence into blind alleys or by-paths, except in those occasional cases where divergence is permitted for disciplinary reasons.

Let me oppose to this ill-considered statement a few lines from my original article on the method:

It is needless to say, young scholars cannot be expected to find out everything themselves; but the facts must always be so presented to them that the process by which results are obtained is made sufficiently clear as well as the methods by which any conclusions based on the facts are deduced. And before didactic teaching is entered upon to any considerable extent, a thorough course of heuristic training must have been gone through in order that a full understanding of method may have been arrived at and the power of using it acquired; scientific habits of mind, scientific ways of working, must become ingrained habits from which it is impossible to escape. As a necessary corollary, subjects must be taught in such an order that those which can be treated heuristically shall be mainly attended to in the first instance.

I feel that perhaps I am directly called to order when I read (p. 47) that:

Infantile methods should not be used for pupils who are no longer infants. Some enthusiasts notwithstanding, it is not lawful to desire "the extension of the Kindergarten methods upwards to the university." If this were possible, it could only be accomplished by making of our educational system one great infant school.

Something depends on the meaning attached to the terms infantile methods and kindergarten methods. However, I am somewhat comforted on finding in the opening paragraph of the section on mathematics the statement:

No subject in the school curriculum stands in greater need of presentation on kindergarten principles and at the same time commands such wealth of illustration.

Of course, there is the usual worship of the German schools but I doubt if the novitiate will gain much inspiration from the long sections dealing with the Prussian curriculum. Prussians are not Englishmen and some of us who have studied long in the country are by no means enamoured of the German system or persuaded that it yields superior results. In any case, we gain little from "Lehrpläne"—we don't want plans but actualities. I simply gasp when I read:

Of the realist studies other than history and geography, natural science is chief. The "educated person," according to the Prussian standard, has been trained to observe, to appreciate causal connections in the natural world and the manner in which they are known; on the material side, he realises the importance of a study of natural science as a useful thing and himself has made some progress in more branches than one.

I should like to meet a boy from a German school who has been trained to observe. Whatever may be said against the teaching of science in our schools, I believe that it is generations ahead of that given in the Prussian schools, in which, if I am not misinformed (and I again made inquiry on the spot only a few weeks ago), it has never passed beyond the severely didactic stage.

Religious Instruction.—Principal Headlam, who contributes the article, has clear views which he expresses clearly, telling us, for example:

It would be quite futile to attempt to write on this subject in a way which would satisfy everyone. The only course open which is of any value is for the writer to state clearly and definitely his own opinions and to leave others to adapt the methods suggested to their own particular position. . . . It must be clearly stated that religious education, to be of any value, must be denominational . . . that religion, to obtain its full value, must be connected with a definite system of life and worship; that it must give a child not only a certain amount of information about Biblical matters but a rule of religious life and conduct. This implies a denomination.

The whole chapter is written consistently from this point of view and to me it appears to be full of helpful and suggestive ideas, full of interest as an attempt to put method into the teaching of a subject which is in no way methodised at present.

But it is somewhat surprising that no word is said of the difficulties which attend the teaching of religion in schools, that no word is said of the possibility of drawing a distinction between the teaching of morality and dogmatic religious teaching: the question must arise at no distant date, not merely because of the growth of agnos-

ticism but because the doubt will make itself more and more felt whether even parents have the right to pledge the convictions of their children—in fact, whether all forms of dogmatic teaching should not be shunned as pernicious, tending as they must to degrade intelligence; whether indeed we should not adopt as our motto the lines:

> There lives more faith in honest doubt,
> Believe me, than in half the creeds.

The Mother-tongue.—The article on this subject seems to me to consist of vague generalities and to be of slight value as a contribution to the practice of instruction; however interesting it may be to the layman, it will not help the craftsman.

Geography.—Bearing in mind the part Dr. Herbertson has played as an advocate of the teaching of geography, his article is scarcely what was to be expected—full of interest and suggestive as it is, it nevertheless lacks point, the programme put forward in it being far too ambitious and extensive. It is again a case of the specialist forgetting that the majority need instruction in fundamentals, not detailed knowledge such as the professional student of the subject may learn with advantage. We teachers are all making the great mistake of attempting too much and consequently are accomplishing practically nothing.

It seems to me that what young people need at first is some clear conception of the world outside their own narrow district—to know that there is a world. The machinery of the schools in no way serves to bring the facts before them. Those who have been to Swanage in Dorset know the great stone globe at Tilly Whim, at least six feet in diameter. I know from experience that in the eyes of children such a model commands attention and has a meaning such as is never conveyed by the conventional, paper-covered, varnished article of the schools. How can it? A child has respect for reality and for pure idealism—but not for farce. The cost of placing globes like that at Swanage in the playgrounds of the majority of the public schools of the country would not be so very great—if a few clerks now engaged in red-tapeing in county council offices were converted into stonemasons and occupied in making them, they would be engaged in a worthy task; or the globe might be constructed of sheets of iron stamped into the required shape and bolted together. I place the suggestion free of charge at the disposal of any aspiring maker of educational appliances who may wish to serve his country. All sorts of interesting games might be played with such a globe.

But in school, the scenery and activities of the world should be displayed by means of good lantern pictures and every class-room should be fully provided with proper pictures. I read somewhere recently in a notice of William Morris that "he understood, not vaguely nor in any mystical sense, the significance of beautiful things in the life of man and that beauty was a symptom of health." We do practically nothing to encourage such health in young children. Why should not each town possess a collection of large, framed photographs which could be circulated among the schools?

If teachers were not gifted with infantile intelligence, the prayer "to think in shape" addressed to them by the one man among them in recent times who has given some thought to his business would not have passed unheeded all these years. If such things as l picture cannot be done in schools, let there be a central school in each large town in which lantern geography is taught efficiently. We have Polytechnics galore in London but does any one of them attempt to do its duty to the masses by giving useful instruction in geography—not for examination purposes nor in accordance with the whims of any Board but to satisfy human cravings and to make known our marvellous wealth of Empire and the opportunities it affords? There has been some big talk of late on the subject presided over by eminent politicians but what is really required is that a few people should take their coats off and do something. Colour photography will soon be at our disposal and it should then be possible to give infinite pleasure as well as instruction by following a course such as was adopted in New York years ago (see the Mosely Reports, p. 24).

A subject almost entirely neglected by geographers at present is geology. In this matter the editor is ahead of his contributor; his reference to the subject under Correlations (p. 26) is perhaps the most luminous passage in his article. Through geology, geography comes most closely into touch with agriculture. The present ignorance of the community at large of even the simplest geological considerations is astounding—and yet these are fundamental.

History.—The article on this subject is again one which is far too discursive to be of much practical value as a tool for the craftsman. From no other subject, I suppose, are clearer proofs to be obtained of our inability to teach down to the level of our pupils.

Mathematics.—A writer who places Prof. Perry's "Practical Mathematics" at the head of his list of books for further reading and Arnold-Forster's "Coming of the Kilogram" and Tylor's "Anthropology" at the end is clearly in advance of his time. The article is in general accord with the modern tendency to teach the subject in a useful practical manner. It is not so pretentious as most.

Natural Science.—I suppose a vice-principal of a training college, like a professor of education, is bound to appear learned and to let on—as Huck Finn did—about things. The curtain-raiser to his play is an outline sketch "of the critical theory of science," use of which, we are told, should "determine the aim and scope of the school curriculum and the details of the teacher's procedure."

> Science [we learn] is a process which at its highest development may be described as aiming at complete intellectual control over the course of Nature. Accordingly, the ultimate aim of the teaching of the subject will be to enable our children to take up this part of their inheritance of the long results of time, &c.

On reading this, I paused in astonishment—it had never occurred to me that I had undertaken so high a mission, my idea being that Nature had a way of controlling me. Then I thought of my friends the failed housemaids and that I was one of those who were contributing, through the rates, towards their indoctrination with these views: by a process of unconscious cerebration, naughty words seemed to be spluttering from my pen, but fortunately, in the end, it is content to write the severely simple boyish vulgarism—Rats! The curriculum is divided into three stages. The first, that of nature-study, is glossed over in a few pages and a course laid down which would occupy many Darwins many years if ever any element of study were introduced into it. When shall we cease to play this American farce and by simple training develop real habits of study? The intermediate stage is largely a measurement course and the good point is made that the instruction at this stage should be correlated with geography. The final stage is that of specialised instruction.

The article as a whole is not badly written but only the advanced teacher will understand it, as a cloak of words covers up the real thought behind. Practically, it is stilted paraphrase of what some of us have written over and over again—why cannot the author recognise this and be grateful? He has contracted the disease and cannot escape from its consequences. "The results of this discussion may be summarised in the dictum that method in science teaching must take the form of an investigation." Could confession be more complete? Why then supplement this with the depreciatory statement: "But it is important to note that it does not necessarily tend to the 'heuristic method' as the latter is described by its chief exponents." Rubbish! The dictum is theirs. The writer, however, has not the courtesy even to quote in his list of books the title of that from which probably he has derived much of his inspiration; he must know the etiquette of scientific circles. Although he has gibed at me as a prophet, by plagiarising he proves himself to be a disciple. Verily am I revenged—and I will not deny that such revenge is sweet after all these years of toil. Fortunately, we are beginning to study children and the spirit of the child—of true unbiassed inquiry—is beginning to dominate the sphere of education; some day the children will come by their rights and grown-up men and women teachers, having learnt from the little ones, will cease from thinking selfishly only of themselves—of their own likes and dislikes. Such an issue is worth working for, at whatever cost.

As a member of the Consultative Committee during the period when the registration of teachers was under discussion, I had the opportunity of hearing all that was said on the training of teachers. It always appeared to me that the enforcement of training was premature, as the appliances were wanting; and they still are, I believe. Persons who can teach and therefore can teach others how to teach are scarcely to be found for the purpose and the mistake has been made of placing the work always in the hands of those who lack training in the art of inquiry. While of opinion that some measure of training is desirable, in order that certain tricks of the trade may be learnt and to develop the professional sense, I am one of those who think that the only real training is that of practice under competent guidance and that the less we indulge in high-flown talk the better it will be for teachers.

Books such as that under notice are a serious danger to the cause of true education, being written to a false scale—especially at the present moment, when we are beginning to realise that it is essential to simplify our procedure so that we may build on secure foundations. If we can but be practical and develop the power of thinking and some slight breadth of understanding in those who are preparing to be teachers, we shall have done a great work; doctrinal shibboleths are of no consequence. We need to train the child to see for itself, to think for itself, to be able to do something in a systematic and honest way—leaving time to fill in the blanks. Dishonesty, not honesty, is encouraged by present methods, as it is patent to the child that school work is to a large extent pretence. Let those who wish to be honest teachers study Thring's "Practical Thoughts on Education after Thirty Years' Work," the opening essay in his small volume of Addresses. We shall do well always to remember his scathing pronouncement that in education *the failures are the lives of men!*

PSITTACUS LOQUITUR.

By Harold W. Atkinson, M.A.

A SILENT sage is better than a chattering fool, but better than either is the wise man with the power of speech. The attempt to change the system of modern language teaching which aimed rather at the production of the silent sage to one which should produce the wise man with the power of speech has often only resulted in an output of chattering fools. Speech is said to distinguish *homo sapiens* from the rest of the animal creation, but it is hardly speech or the utterance of a *homo sapiens* that is reproduced in writing as *Comme ont alez vous* or *il y ont n'a six*.

In the multitude of counsellors there is wisdom, and another counsellor added to the already existing multitude may yet increase the wisdom, whether it be through introducing new matter, or through driving home by repetition what others have already said.

"All work and no play makes Jack a dull boy." But all play and no work makes Jack his duty shirk. There is a danger of the oral method detracting from the real study of the language. Kindergarten French tends to the cultivation of weakly annuals rather than of hardy perennials. *Loquitur* may be the verb, but the subject is more likely to be *psittacus* than *homo sapiens*. *Cogito, ergo sum* is replaced by *loquor, ergo*

cogito, and neither teacher nor pupil may observe that, as in the first case there is a suppressed premiss, thinking beings exist, so in the second there is a suppressed premiss, speaking beings think. This may, however, be as untrue of any individual *homo* as it is of the class *psittacus.* In short, the fact that a pupil can repeat phrases learnt by ear is no guarantee that he understands them, at least in the way that we have a right to expect that our pupils should understand a language.

Bad spelling, bad grammar, guess work, and a more or less permanent handicap in later linguistic studies are among the results of an injudicious use of the oral method.

In the case of young pupils a fruitful cause of much error is the attempt to teach them a foreign language when they are as yet possessed of a very insufficient basis of their mother tongue. This will sound heresy to those teachers whose creed it is that the mother tongue should not be employed in a foreign language class. A teacher is, however, at a disadvantage, whatever method he employs, in trying to teach the meaning of *des animaux intéressants* to a pupil whose nearest equivalent in his mother tongue as a translation of it is given as *animals interestions.*

Closely related to this is the theory that a child at school should learn a foreign language in the same way as it has learnt what it knows of its mother tongue. Some important things are often forgotten. The knowledge of the mother tongue is very limited. The change that has taken place in the child's mind since it began to learn its mother tongue is very considerable. The conditions that obtain in the nursery and in the class-room are very different. In consequence of these facts the method of the nursery is not applicable in the class-room.

Let it be granted that a child of ten *can* learn a second language by pure imitation; learn it, that is, for speaking purposes. It will also be granted that it takes longer to learn it in that way than by a method of real instruction and study. Further, the language so acquired is purely oral, like the language of any illiterate. A case of this sort came under the writer's notice recently. A youth of about seventeen spoke French readily, but his dictation was full of errors due to ignorance of the grammar and orthography. He had learnt French from living for years among French people. Similar results appear in the work of classes in which the oral work has been carried on at the expense of the literary work. Our language teaching should aim at producing satisfactory results on both the oral and literary sides. Indeed, most teachers would agree that if it is not possible to combine the two, the oral should give way to the literary. Further, we are not so much concerned in giving our pupils some knowledge of elementary courier French, but much more concerned in giving them in the time available the largest amount possible of knowledge of the language. There must, then, be adopted a method which takes cognisance of these facts. It does not require to be purely oral, because the child already knows how to read and write. The child realises the existence of words which, to the infant learning to speak, are nothing but groups of sounds. It has accumulated a mass of facts, names, experiences. These various acquisitions can be and should be utilised in acquiring further knowledge, whether in the departments of languages, mathematics, or any other subject of study.

The pupil's power to read and write offers an aid to learning which should be employed to its fullest advantage. The mechanical act and labour of writing is a most effectual aid in impressing on the mind the details of any subject and in ensuring accuracy. The act of reading aids in the formation of a correct *Schriftgefühl,* that result of training so useful to adults, by which they check by the look of a word whether they have written it correctly. This *Schriftgefühl* should be developed in a pupil as soon as possible. The lack of it produces such results as *Où avait vous achetéz cette robe?* Or the many spellings of *vingt* that some sets of examination papers furnish. It may be noted that these remarks on reading and writing are equally applicable, whether in the early stages the phonetic script or the orthographic be used; with the additional advantage in the case of the phonetic script that the *Schriftgefühl* developed is of great assistance in maintaining a correct pronunciation. It is not worth while to discuss here whether it handicaps the attainment of a correct orthographic spelling. Let anyone in doubt consult teachers who have had experience in the matter.

The importance, the extreme importance, of the use of reading and writing in connection with oral work is often overlooked. This is, perhaps, due to the excessive emphasis that has been laid latterly on the oral side of teaching. But it must be realised that in developing any special faculty or power the objective is not necessarily identical with the means to be employed to attain it. The advantage of the employment of the language orally in class lies not so much in its use as a direct means of teaching as in its use as a means of continual practice in what is being learnt, and in the aid given in fixing its details by the training of the ear and of the speech organs. The latter leads to the rapid connection between the thought and the utterance of the word to express it that is only attained by practice. The former serves as a corrective to false utterance in the earlier stages, and leads to a more ready acquisition of new words and phrases due to the power of analysis of sounds that the ear training develops. The importance of this aspect of oral teaching is often disregarded. The oral method becomes less methodical in direct proportion to its pure orality. It is from the suitable proportioning of language study and language exercise that the best method is to be evolved.

The minds of an infant, a youth, and an adult are at different stages of development, and consequently the methods of learning are different.

The average adult teacher who has learnt his foreign languages abroad has not learnt them on a purely oral system, but has studied them closely and grammatically, and his practice in speaking has been largely, if not mainly, a means of exercising himself in what he has learnt rather than a direct means of learning. He is generally more than sceptical of the possibility of an adult picking up a language. We even, if only we could realise it, hardly rely on our pupils picking up their native tongue. Other nations rely on it less than we do. They, and we in a less degree, deliberately teach it. We may, then, safely deduce that the adult method of learning a language, adapted to the less capable but not infantile minds of the pupils of school age, is better than the purely imitative, which is necessarily the only one possible in the nursery.

I believe that if opinions were collected from modern language teachers who had had experience of both methods, it would be found that the majority were of opinion that they could, in a given time of, say, two or three years, obtain better results in the spoken language with a sound grammatical study of the language plus oral work than with a system of oral work leading up to grammar. This, again, will appear heresy to the Inductivists. It is another case of false argument and false psychology. The child learnt its mother tongue inductively, they say; let it learn a second or a third language in the same way. It would probably be more correct to say that it learnt its mother tongue by a system of trial and error, and that the infant has no power of induction. Do not the results of the inductive method depend rather on the concentration of the mind on a very limited amount of material at one time and on the amount of repetition of that material? Is not the induction, in point of fact, done much more by the teacher than by the pupil? In other words, is it not a waste of time for the teacher to "discover" the grammar in the class instead of giving the pupil grammar results that have been discovered centuries ago? It is the results that they remember, and they remember them not because of the induction, but because of the repetition of the matter. They are not sufficiently mentally developed to become as yet Youngs and Champollions. Grammatical study plus oral work, then, we argue, produces more rapidly good results than oral work leading to inductive grammar.

I lay some stress on this because, although it may savour of retrogressive views, there is a great danger with the oral method of the grammar being relegated to a back seat, and producing such results as *parlez, racevoirs, finere, rend*; results which, educationally considered, are worse than a non-oral method that leads to correct forms. "Educationally considered," because we are not, or at least should not be, really concerned in turning out pupils who can patter a certain amount of French. We should be far more concerned in training our pupils in such habits of linguistic study as will enable them to continue them with as little difficulty as possible after school age, should their wishes or circumstances lead them to do so. No teacher of modern languages would, I believe, seriously recommend a pupil after leaving school to adopt a purely oral method.

To many readers much of what has been said will appear superfluous. The results, however, of examinations show that the matters referred to require attention in some quarters. There is another point of some considerable importance to which attention is but rarely directed, the necessity of impressing on pupils the art of thinking before speaking, and of realising that if they do not know the phrase or idiom to be used, the chances are largely against the success of guessing. Not until this is realised will the pupil be in a position to derive from free conversation with a foreigner the fullest profit, which consists not only in being able to follow what he says, but also in being alive to observe at the same time how he says it. There is a danger of prolonging the early stages of oral teaching too much; of, in fact, teaching too much and training the observation too little. This training of the observation should be begun in the schools. It is noticeable how often in oral examinations a candidiate understands the gist of a question without observing the construction or idiom employed so as to be able himself to employ it in the answer.

Two subjects still remain that merit some reference—composition and translation. Translation has been so fully dealt with recently in the discussion columns of *Modern Language Teaching* that further reference to it here is unnecessary.

On the main points with regard to composition there is fair agreement of opinion. I would, however, put up a green light before free composition, and even half of that light might be replaced by red. It is a golf links without any bunkers, and tends to produce a type of mind that dodges difficulties instead of facing them. The pupil needs encouragement in attempts to express the more difficult ideas which free composition offers the means of avoiding. Rather, however, than that he should flounder in mere guess-work, neglecting the art of "thinking before speaking" referred to above, let him, within bounds, be encouraged to ask the teacher how to express an idea that has occurred to him, but for which he is at a loss for the correct phrase or idiom. The difficulty of marking such work need not be taken account of, for some of the best work is done when the question of marks does not enter into it. Such a method would help the pupil to proceed, without fear of his work being "howlered," beyond the realms of banality and platitudes, and to feel himself developing still further from *psittacus* to *homo sapiens*.

Pascal, Selections. Edited by F. M. Warren. ix+153 pp. (Heath.) 2s.—We can speak highly of this edition. The introduction is all too brief, but the selection is a good one, and the notes give all the information that is necessary.

SCHOOL ATLASES AND HAND-MAPS.

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THERE are now such a number of atlases upon the market that it is impossible to deal with them all within the limits of an article, and it is therefore necessary to make a selection. At once there arises the need of some criteria of judgment and selection; hence at the outset it is desirable to consider the kinds of maps which are to be found in atlases, and to estimate their relative advantages and disadvantages. If such a study is made, it is obvious that the results can be applied in considering either the atlases mentioned below, or others that may be presented to the public. Four kinds of maps may be distinguished:

1. The *political* maps which alone were to be found in ordinary atlases a few years ago. These maps show the shape and extent of a region, its political boundaries, its mountains, rivers, towns, and railways. The mountains are generally shown as ranges by means of hill-shading, and the resulting idea of surface-relief that is conveyed to the scholar is that the mass of the country is flat and crossed by comparatively narrow ridges of high ground. The colour is used to distinguish different political areas. The weakness of these maps is twofold, viz., that the relief of the region is very poorly expressed, for except in large scale maps hill-shading is inadequate; and that the colouring of political areas is unnecessary—unless in exceptional cases where these are complicated.

2. The *orographical* maps remedy this weakness. They show the elevation of the land by using the colours to denote land of certain altitudes. These orographical maps—which are sometimes miscalled "physical"—are much more useful both for the student and the teacher, for the elevation of the ground is a factor the importance of which cannot be exaggerated. To understand almost any feature of the geography of a region the surface-relief must be considered, and it is most adequately and simply expressed by means of orographical colouring, especially when hill-shading is added to denote the greater slopes. Political areas can be shown by boundary lines, and, of course, rivers, towns, and railways can also be inserted.

3. The *photo-relief* maps also attempt to portray the relief; but there are two objections to their use: they cannot show absolute heights of regions with any success, and they contain exaggerations which may mislead pupils. As a matter of experience, it may be added that the orographical maps are scarcely, if at all, more difficult for children to understand than these photo-relief maps.

4. The *special distribution* maps show the distribution over the earth of other phenomena; *e.g.*, temperature, winds, rainfall, peoples, and productions. There has, happily, been a greatly increased use of such maps in recent years, and they must be considered indispensable. Sometimes a text-book may contain them, but if that is not the case, the teacher should obtain them either in the atlas or as hand-maps. Among these, climatic maps showing temperature, winds, and rainfall are of the greatest importance; and these should indicate the conditions in at least two periods of the year. To know the mean annual temperature of a place is not nearly so useful as to know the mean temperatures during the hottest and the coldest months respectively; again, the winds in summer are in many parts quite different from those of winter; also, in respect of rainfall, it is desirable to know not merely the total annual amount, but the seasons of the year at which this is obtained, as is shown by the fact that whether a region is grass-land or forest-land depends upon whether the rain occurs during one season only, or whether water is available all the year round. Therefore the minimum requirements in special distribution maps are maps showing temperature, winds, and rainfall for two different seasons (*e.g.*, January and July) and associated with them a map showing the natural vegetation of the countries of the world. Several atlases have most of these, but so far as the writer is aware, only three show the rainfall by two seasonal maps; these are the "Progressive Atlas" (Philip), the "Atlas of Commercial Geography" (W. and A. K. Johnson), and the "Class Room Atlas" (W. and A. K. Johnston) mentioned below. Most of the special distribution maps deal with the whole world, and in that case the projection employed must be carefully considered. It is very desirable that the use of the Mercator projection should be restricted to maps where direction is important and area comparatively unimportant, as in wind and current maps; where the area is important, as in vegetation maps or those showing the British Empire, the gross distortions of the Mercator are very misleading, and some other projection should be used. In this respect the "Progressive Atlas" deserves special commendation.

Many atlases are still sold which contain only the "political" maps, and such atlases are not here further considered partly because of lack of space to deal with their great number, and partly because they are less valuable than those containing the orographical maps, which, it is to be hoped, will supersede them. Also the atlases of which photo-relief maps are the chief feature are here omitted, and in this connection it may be mentioned that their use has been discouraged in a resolution passed by the Committee of the Geographical Association. There remain for consideration atlases of the modern kind in which are to be found orographical and special distribution maps.

One of the first and best English atlases of this kind is the "New School Atlas," by Mr. G. G. Chisholm (Longmans, 12*s.* 6*d.*). This consists of three parts: a considerable number of well-selected special distribution maps; a series of orographical maps of the regions and

countries of the world; a collection of illustrations of typical scenery, plants, and peoples of each region. The orographical maps are bound up separately and published as the "New Five-Shilling Atlas" (Longmans). They are accurate and well proportioned, and a special feature is the clearness obtained largely by the omission of names not required in school work. The older atlases were usually greatly overloaded in this way. Longmans' "School Atlas" (*2s. 6d.*) is constructed on a similar plan, but the maps are fewer and on a smaller scale.

An excellent, although expensive, atlas is the "Systematic Atlas" (Philip, *15s.*); and the "School Edition" (*10s. 6d.*) is similar, but without those special distribution maps which deal with the world as a whole. The "Modern School Atlas of Comparative Geography" (Philip, *3s. 6d.*) deserves careful consideration, for it has many good points. The special distribution maps are good, and the bulk of the remaining plates are orographical. A few are political and some of these rightly so, as in the case of the continent of Africa, but the political colouring of others has no apparent justification. Yet this atlas is distinctly good and useful, and for lower classes cheaper editions of it are published. Among these are the "Atlas of Comparative Geography for Junior Classes" (Philip, *2s.*), the "Elementary Atlas of Comparative Geography" (*1s.*), and the "Sixpenny Atlas of Comparative Geography." On the whole, the selection of maps for these issues from the parent atlas is well done, but we regret that in them there are only political maps for the separate countries of England and Wales, Scotland and Ireland. Several special editions of the "Elementary Atlas" are to be obtained at a slightly higher price with additional plates of special localities, and of these the London County Council edition (*1s. 3d.* net) is particularly good, as it contains climatic maps omitted in the other editions of the elementary series.

The "Progressive Atlas," by Mr. P. H. L'Estrange (Philip, *3s. 6d.*), is a unique production. It was designed to form part of the "Progressive Course of Comparative Geography," but has also been issued separately. It contains four kinds of maps: special distribution maps of the world as a whole, similar maps of smaller areas, orographical maps with names, and the same orographical maps without names for test purposes. Although compiled to accompany a special book, yet as an independent atlas it is well worth considering, and indeed contains much valuable information more usually found in text-books than in atlases.

The "Class Room Atlas," by Mr. E. F. Elton (W. and A. K. Johnston, *5s.* net), is a useful atlas of an all-round character. There are special distribution maps of the world as a whole, followed by maps of the various regions, showing all of them orographically and some also politically. These maps are effective in their simplicity. Lastly, a series of Biblical and Classical maps concludes a very good work for teaching purposes. The same publishers issue the "Unrivalled Atlas" (*3s. 6d.*), which has thirty-three political maps with too many names for school purposes, and seven orographical maps at the end; also a "Shilling Atlas" of the same character, but rather a larger portion of orographical maps, and a "Sixpenny Atlas," of which the most noticeable feature is the number of maps of parts of the British Isles, many of them orographical and on an unusually large scale.

The "London School Atlas," by Mr. H. O. Arnold-Forster (Edward Arnold, *1s. 6d.* to *3s. 6d.*, according to binding), has some special features. It has notes on map-making and reading, with specimens showing various forms of maps and their distinctive methods of expressing the characteristics of a region. Among the political maps are a number of orographical maps, and several of these have the unusual advantage of being large double-page plates measuring about 9½ by 15½ inches. Four sheets illustrate the building of the British Empire and the comparative size of its various parts. The atlas is very clearly printed, and, on the whole, should prove useful. Most of the political maps and a few of the smaller orographical maps from the above are bound up as the "Home and Abroad Atlas" (Edward Arnold, *8d.* net).

A high-class atlas at a low price is the "Comparative Atlas," by Mr. J. G. Bartholomew (Meiklejohn and Holden, *2s. 6d.*). It has a set of special distribution maps of the world at the beginning, followed by a series of various kinds of maps (*e.g.*, political, orographical, population, &c.) of the British Isles region, and then a good selection of maps of the rest of the world either orographical or political. The weak points of the atlas are that the wind systems of the world are inadequately shown and only the annual rainfall is given, that there are too many political maps, and that the orographical colouring on the others stops short at the boundary of the particular country or continent. Yet, in spite of these points, this work is in the front rank of modern atlases, and may be highly commended. Mr. J. G. Bartholomew has also compiled an "Atlas of Commercial Geography" (Cambridge University Press, *3s.*), which has several good points. An atlas of this kind requires revision after a shorter period than others, and hence a new edition would now be very welcome, especially as Mr. Bartholomew's recent and larger work, the "Atlas of the World's Commerce" (Newnes, *21s.* net), is by far the best of its kind, both as regards completeness and accuracy. The same editor is in part responsible for the "Historical and Modern Atlas of the British Empire," by Messrs. C. Grant Robertson and J. G. Bartholomew (Methuen, *4s. 6d.* net). The title of this work well indicates its scope. The historical development is indicated by a series of maps, both of the world and of the more important parts of the Empire, showing the extent and divisions at different periods of history. On the other hand, the present conditions of the

regions are shown by orographical, political, and in some cases vegetation maps. For a course which deals specially with the history and geography of the British Empire the atlas will be found of the greatest value.

As in the case of atlases, there is a great variety of hand-maps, and those which can here be considered are of three kinds: orographical, outline, and Ordnance Survey maps. Two sets of orographical maps deserve special mention. The "Diagram Series of Hand-maps" (Philip, 1*d.* each net) consists of thirty orographical maps without names, showing the chief rivers and the positions of towns, besides the surface-relief. They are well adapted for test purposes, to supplement political maps, or to be used in connection with a wall-map. The thirty maps are published bound at 3*s.* A similar series, to which the same remarks apply, is that of the "Physical Test Maps" (Johnston, 1*d.* each net).

With the decline of the old memory-map drawing, there is a growing and desirable practice of making sketch-maps, showing special features of a region. For this purpose it is a great advantage, both as regards time and accuracy, to have blank *outline maps*. These are supplied by Messrs. W. and A. K. Johnston in a size 14½ by 11½ inches at 1*d.* each; by Messrs. Philip and Son in a size 21 by 17 inches at 6*d.* each, in a size 13 by 11 inches at 1*d.* each, and in sizes 10 by 9½ inches and 10 by 8 inches at ½*d.* each; by Messrs. Stanford in a size 17 by 14 inches at 3*d.* and 6*d.* each, and in a size 15 by 12 inches at 1*d.* each. Also the same publishers have the "Autograph Hand-maps," which are outline maps printed in a dull brown with good hill-shading, at 1*d.* each net. Messrs. Relfe Bros. publish the "Ronnene Outline Maps," on a white material from which lead pencil marking can be erased, at 4*s.* per dozen net.

For the study of the neighbourhood of the school large-scale maps are necessary, and these can now be obtained cheaply from the Ordnance Survey Office, Southampton. For town districts those on the scale of six inches to the mile are desirable, and for country districts those on the scale of one inch to the mile are usually sufficient. For the school journey, now coming to be regarded as a necessary part of a course, such maps are indispensable, and if an undertaking is given that they will not be sold, but used exclusively for educational purposes, a quantity of not less than 200 copies of the same map can be obtained at a price ranging from about 1½*d.* for an 18 by 12 sheet upwards, according to the style and size of the required map. If a larger quantity is taken the price is reduced; *e.g.*, 1,000 copies can be obtained at the rate of ¾*d.* each for the cheapest kind. Further particulars can be obtained from the Director-General, Ordnance Survey, Southampton.

Messrs. Philip and Son publish a "Set of Climatological Maps" at 2*d.*, which consists of four plates, as in their atlases mentioned above, to show the climatic and vegetation conditions of the world, and the rainfall and vegetation of the British Isles. This set will prove a valuable adjunct where the atlases at present in use are lacking in these features.

SIMPLE SCIENTIFIC APPARATUS DESIGNED BY TEACHERS.

THE progress made in teaching science experimentally was well illustrated by the exhibition of apparatus held in connection with the annual meeting of the Association of Public School Science Masters at Westminster School on January 14th. As Sir Henry Roscoe pointed out in a letter to the secretary, which was read to the association, such an exhibition would have been impossible thirty, or even twenty, years ago. On one hand, schoolmasters had not then realised the advantage to be gained from regular laboratory work; on the other, the dealers in scientific apparatus were still clinging to the old idea that if they were to make a living they must turn out apparatus having only the best possible finish, and sold at correspondingly high prices. In other words, the difference between the requirements of schools and universities was not recognised.

Two years ago the physics laboratory at Westminster was more than sufficiently large to contain all the exhibits; last month the large hall was filled to overflowing; practically all the well-known firms were represented, whilst the exhibits of new devices introduced by the members themselves numbered sixty-three separate items, against thirteen in 1906.

Upon the stalls of the apparatus dealers we looked in vain for expensive balances and high-priced electrical measuring instruments. In their place were to be found simple instruments capable of yielding results of far greater accuracy than it is to be feared most of the boys for whom they are intended will ever obtain from them, but costing only a fraction of the price which would have been considered, until recently, the minimum at which they could have been produced.

The largest exhibit by a member of the association was that of Mr. L. Cumming, who showed a collection of apparatus used at Rugby for a term's work in electro-magnetism. The chief interest of this exhibit was the proof it afforded that it is possible to teach science up to scholarship standard without the use of high-priced apparatus. Much of that shown had been made by the boys themselves at a nominal cost, and was yet capable of giving excellent results. The exhibition was in illustration of the paper read by Mr. Cumming and referred to on another page.

Some of the exhibits by members of the association are described below:

The various uses to which "Plasticine" may be put in a physical laboratory were demonstrated by Dr. T. J. Baker, of King Edward's School, Birmingham, who fitted up a small optical bench, using this substance for his supports. The mate-

rial is easily moulded and retains its form indefinitely; in fact, if the apparatus is not too heavy, it seems possible to adjust it by this method almost as easily as though one had the command of an accurate optical bench.

Simple optical benches were exhibited by Mr. G. W. Hedley, of Cheltenham, and Mr. J. Talbot, of Harrow. Those of the former consisted of a raised wooden platform covered with a sheet of paper. The mirrors or lenses were placed on small metal holders, the position of which could be marked and the distances measured by callipers, the height of the platform being such that the lenses, &c., were on a level with a lamp placed on the bench. Mr. Talbot's bench consists of an ordinary metre rule placed on its edge; over this slide the supports for the lenses, the lower ends being bent out so as to form a support for the rule.

A water voltameter for general use by boys was another of Mr. Hedley's exhibits. This apparatus is constructed on an entirely new principle and promises to be of great use. Should it induce science masters to let their boys make more quantitative determinations themselves than is at present the case it will serve a most useful purpose. In ordinary voltameters there are two difficulties: (*a*) the platinums are liable to get broken, and with the metal at its present price this is enough to make masters wary of allowing any but their senior boys to carry out experiments; (*b*) it is difficult to fix the tubes so that they cover the electrodes entirely. In the new arrangement both these disadvantages are overcome by having the platinum, which can be made very thin, fixed round both sides of a strip of vulcanite. These uprights are then pushed through wider pieces of the same material, forming bases upon which the tubes may rest. The connection with the battery is made in the usual manner with the platform projecting below the base.

An improved form of steam-heater, shown by Mr. A. Beresford Ryley, of Malvern, may do something to remove a difficulty which is often felt in physical laboratories by masters when taking junior forms in heat. It is probably the custom in most schools to let the boys make their first few determinations in calorimetry by means of a block of metal fastened to a string; having boiled this in water for some minutes it is transferred to the calorimeter containing cold water. Our own experience, and doubtless that of most others, is that although the boys can easily see the various sources of error introduced by this method, they obtain more accurate results with it than when they adopt the better plan of heating the metal in a tube surrounded by the boiling water, the time lost by a beginner in transferring the contents of the tube to the calorimeter being so long that the metal has cooled considerably. Mr. Ryley's calorimeter consists of a copper cylinder fitted with movable handles and a cork carrying a somewhat thick glass test-tube; an aperture is provided for the escape of steam and can be shut by means of a sliding door. When the door is shut the cylinder is almost air-tight, but to prevent the escape of any water when the instrument is inverted a wide protecting lid is soldered to the upper part of the cylinder, as shown in Fig. 1.

A device for showing the transport of ions was exhibited by Mr. Thwaites, of Wyggeston School, Leicester. It consists of a U-tube three-quarters filled with a jelly coloured with potassium bichromate or copper sulphate. Above the jelly is poured a solution of potassium nitrate. The current is passed through the tube by platinum electrodes dipping into the potassium nitrate solution, when the coloured ion can be seen to move.

Jamieson's sensitive paper deserves to be better known than appears to be the case. Mr. Thwaites showed how it can be used for measuring the conducting and the radiating power of various bodies. For the former purpose, all that is necessary is to place the two wires, whose conductivity is to be compared, upon the paper and to heat the free ends to the same temperature. The transference of the heat is seen by the paper turning green.

FIG. 1.

An apparatus to show that a body projected horizontally falls to the ground in the same time as a body dropped from the same height, exhibited by Mr. Boardman, of Christ's Hospital, should be of help at the present time, when, at last, a serious attempt is being made to teach dynamics in an experimental manner. The apparatus consists of a box, the upper portion of which contains two small partitions, one opening at the bottom, the other at the side of the box, both openings being at the same level. Balls are placed in each partition, that in the one opening horizontally being forced against a spring which gives it, on opening the door, a horizontal velocity. By means of a lever, both doors can be opened at the same instant, and the balls begin to fall simultaneously. To obtain satisfactory results it is, of course, necessary to place the apparatus at some distance above the floor of the laboratory.

The exhibits used in teaching chemistry were, naturally, much less numerous than those dealing with physics. One of the most interesting was *an apparatus to show the dissociation of ammonium chloride,* exhibited by Mr. C. E. Livesey, of Stonyhurst. The idea is probably not a new one, but since it does not seem to be generally known, a description may be of interest. A porous partition composed of compressed threads of asbestos is placed in the middle of a wide glass tube, the ends of which are closed by rubber bungs containing two holes. Through one hole

a piece of glass tubing bent at right angles is placed, and passes into a wider tube containing litmus paper; through the other hole pass tubes bent as shown (Fig. 2). On connecting the apparatus with a supply of hydrogen, or with an air-bellows and heating the salt placed in the wide tube, it is found that one piece of litmus turns red, the other blue.

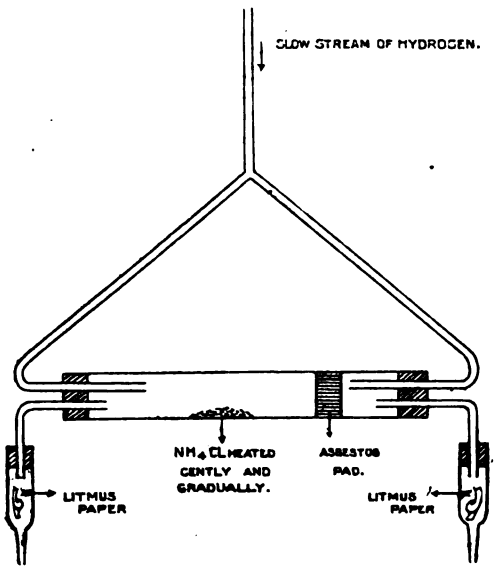


FIG. 2.

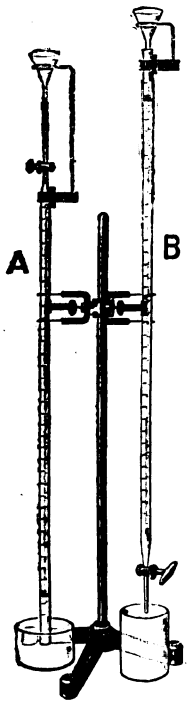


FIG. 3.

Books of combination labels for use in chemical laboratories were shown by Mr. Douglas Berridge, of Malvern. These labels differ from most of the books published in having the names of the electro-positive radicals printed on separate slips from those of the electro-negative radicals. The perforation is such that when any two labels are attached to a bottle they give the effect of a single label of double width; these books should prove of use for store cupboards and in advanced laboratories.

A new burette clip, shown by Mr. G. H. Martin, of Bradford, is intended to be used for attaching funnels to burettes during experiments, such as finding the volume of gas evolved from a given weight of magnesium when dissolved in acid. It may, however, be used for attaching to burettes when used in the ordinary manner, since by so doing the formation of "air-lock" is entirely prevented. Fig. 3 illustrates the use of the clip for both purposes. We have tested the use of this simple contrivance in ordinary volumetric analysis and have found it a great convenience.

HEADMASTERS ON THE NEW REGULATIONS FOR SECONDARY SCHOOLS.

THE new Regulations for Secondary Schools met with severe criticism at the Headmasters' Conference and at the meeting of the more democratic Association. It cannot be said that the more august body was the wiser. An outsider, on reading the report of the Conference, would naturally infer that the Board of Education had arbitrarily changed the constitution of all governing bodies, abolished all denominational religious instruction, and forced the schools to open their doors free of charge to any elementary-school children who chose to apply for admission. It is needless to say that this is not the case—the representatives of the great public schools have been raising bogeys. They might have been expected to consider the regulations in a liberal spirit, or at any rate to have made themselves fully acquainted with the regulations before giving public expression to their views, or imputing political motives to the Board of Education.

That the regulations mark a striking development in secondary education is quite true, but that they are revolutionary or anything but a natural outcome of previous regulations cannot be maintained. Modifications there no doubt will be, but the headmasters of the Conference would appear to be satisfied with nothing short of complete withdrawal. This is not only beyond the range of practical politics, but would be educationally disastrous. The central fact of the situation is that large *additional* grants are now to be given to secondary schools. When new grants are given, it is not unreasonable that new conditions should be imposed if these make for educational efficiency, or are likely to lead to smoother working of the administrative machine.

Before the new conditions are considered, it should be premised that grants at the old rates may and presumably will be given on the same conditions as before to schools which do not accept the new terms. No school, therefore, need be in a *worse* condition than before, even if it makes no change.

The first new condition relates to the composition of the governing body. A majority of the governors is to be appointed by the local authority. The local authority is *not*, as the Conference appeared to think, to manage the school directly. It is not even necessary for the authority to appoint its representatives from the ranks of its own membership. This condition was banned unanimously by the headmasters, although Mr. Keeling, in a letter to the *Times*, expresses cordial approval.

If governing bodies which have hitherto done their work well were to be arbitrarily displaced in favour of untried men, the regulation would certainly be unreasonable, and some modification would be called for; but, in the first place, this condition may be waived at the option of local authorities, and, in the second place, local authorities already have representation on most governing bodies, and it is quite possible to have an

increase of this representation without any break in the continuity of the school history.

Without local control, sooner or later the schools will suffer, for it must not be forgotten that the new grants mean largely increased expenses. Free scholars will pay no fees, and their admission will involve increased numbers and increased accommodation. Who will pay for new buildings? It is certain that local authorities will be appealed to, and without control in the form of preponderance on the governing body, they are not at all likely to respond. Whether control by local authorities is good or bad, it is bound to come. The objection of schoolmasters to such control appears to be almost always an objection to the *personnel* of the local authority. It would be sound policy and good citizenship to persuade capable men and women to take an active part in municipal and county government rather than to adopt the somewhat superior attitude of contempt for the "worthy Mayor" or County Councillor, from whom even the youngest headmaster may occasionally learn something.

The second new condition relates to religious instruction. Religious instruction in secondary schools, aided by Government grants, is to be undenominational. Denominational instruction may, however, be given, with the consent of the local authority, to the children of parents who make written request for it—provided that the cost of the instruction is not defrayed from Imperial or local grants. This condition, again, was severely condemned by the Conference—although there were some powerful voices on the other side—on the ground that it introduces the religious difficulty into secondary schools. But it appears to be far more reasonable that a parent who wishes for special religious instruction should apply for it than that one who does not want it should apply for exemption. It is difficult to see how the regulation could adversely affect any school which has a conscience clause. A strictly denominational school which excludes pupils not belonging to the denomination would no doubt suffer, but in this case it is not unreasonable that the members of the sect should pay for their exclusive "atmosphere." Really, the headmasters have chosen their ground badly. To be intelligible they should have opposed the abolition of religious tests for teachers in secondary schools. The provision as to denominational instruction is a necessary corollary if freedom from tests is to be granted.

In the debate at the Conference, Dr. Moss gave expression to views which are impossible to reconcile with freedom from tests. He said that there must be no interference with the freedom of teachers to give expression to their own religious convictions. If these teachers are to be appointed without reference to their religious views, Baptist theology in Form III. may be followed by Anglican teaching in Form IV., with a top-dressing of Presbyterianism or Christian Science in the upper classes. The Board of Education plan is, at all events, practicable. If special religious instruction is required by parents, the governing body may be allowed to provide for it. The members of the staff will presumably be entirely free to undertake the instruction or not.

In the past there have been cases in which appointment to a mastership has been conditional on religious belief. To the great advantage of education, the new regulations abolish such tests. The new provision as to denominational teaching is a necessary outcome.

At the meeting of the Headmasters' Association, the free admission clause excited the greatest amount of interest. The Conference dealt with the matter only incidentally, but Dr. Eppstein was wrong in declaring that 25 per cent. of elementary-school pupils were to be allowed free admission whether fitted or not. The conditions of free admissions are carefully regulated. All candidates may be required to reach the standard of knowledge usually demanded for admission to the school. How is "fitness for admission" to be otherwise determined? The view of some headmasters seems to be that any middle- or upper-class boy is *ipso facto* qualified for admission to a secondary school, but that a much higher standard should be required from an elementary-school boy. If the candidates do not reach the usual admission standard, the places need not be filled. If, on the other hand, there is an excess of candidates, a competitive examination must be held, and the standard of admission may be a high one. In any case, there is no necessity to admit boys whose attainments fall below the level hitherto required for admission.

At the same time, the regulation is fairly open to criticism, on the ground that a rigid rule of 25 per cent. is not everywhere advisable. There may be some districts where the population is of such a character that 25 per cent. is too small; others there certainly are where it is too large. The regulations, however, seem to imply that this percentage may be varied at the discretion, not of the local authority, but of the Board of Education itself, and it ought not to be assumed that the Board would be actuated by any but good educational reasons in fixing the necessary proportion.

In one particular, too, some injustice will undoubtedly follow. The provision is presumably intended to secure that the children of poor parents shall be able to enter the secondary schools in larger numbers. What is to be the test of poverty? Previous education at a public elementary school, say the regulations. But there are many parents of straitened means—poor professional men and others—who do not and will not send their children to public elementary schools. The burden of taxation, Imperial and municipal, falls heavily on this class. It is only fair that some consideration should be shown to them, and it is to be hoped that the boon of free places can be extended so as to include their children. The resolution of the Association in this sense is fully justified. The difficulty seems to be to secure that the really poor parent shall

benefit, and that people who are well enough able to pay for their children's education shall not take advantage of the new State endowment of secondary education to escape from a rightful burden. A declaration of poverty, or of income limited to a certain amount, might remove the difficulty. It is to be presumed that this is what the Association meant in declaring that the free places should be open, not only to children educated in public elementary schools, but to all "properly" qualified candidates. If so, it is earnestly to be hoped that consideration will be given to the matter, which is a sore point with many struggling parents of the middle classes.

ON CORPORAL PUNISHMENT.[1]

By A HEADMASTER.

II.

IF the arguments of the previous article are correct, it will probably be granted that of all severe punishments the cane is open to the fewest real objections; some may be inclined to consider this a *reductio ad absurdum,* and to inquire why, then, we should have any punishments *but* the cane. Well, there is at least one school where this method is adopted and is not found to lead to an absurdity; but it is not our purpose to advocate this extreme, neither does it logically follow from our argument. What does follow is that when a *severe* punishment is required, it is usually better to have recourse to the cane than to use any of the alternatives which are in vogue: long impositions and detentions take up too much of a boy's time, and are impracticable beyond a certain amount; suspension from school punishes the parent as much as, or more than, the boy, and ought to be considered as a more serious punishment than a thrashing; expulsion is obviously not to be thought of for most "canable" offences; and book-signing is useless for the hardened offender, while it cuts at the self-respect of a sensitive boy and makes him miserable afterwards. The cane is liable to none of these objections—it is short, sharp, and effective, and, if properly regarded, not humiliating.

It will be found that most of what is commonly said against the cane is really directed against its misuse, and no discussion of the subject would be adequate without some reference to the conditions necessary to secure the benefit of the treatment without the drawbacks which have undoubtedly often accompanied it and given rise to so much just criticism.

One essential about it is that it must *hurt*; if it is not a real punishment which a boy will remember, it had better not be given at all. The spectacle of a boy rejoining his fellows with a broad grin on his face does not make for edification; most of us have tried the experiment, and found that a slight caning almost invariably fails and has to be repeated, "with advantages," before long. On the other hand, it is not necessary to say that excess must be avoided—we must aim at just enough and no more. What is known as "thrashing a boy within an inch of his life" is quite indefensible, and such a thing, we may safely say, is now absolutely unknown in any school in the country.

The first essential, then, being that the punishment must be sufficient, and the second that it must not be excessive, the third should be that it be properly administered. There is no need to go into details, but the hands should not be struck, nor should the head; a summary box on the ears is sometimes very effective, but it is dangerous, and if it is given by a master who has lost his temper (as it generally is), it is one of the most reprehensible forms of punishment that could be mentioned. It is worth remarking, too, that a semi-playful rap on the knuckles or tap on the head is apt to be regarded somewhat differently by the recipient; the boy's sense of humour is, in these cases, always inferior to the master's.

The *time* of administering the punishment is also a matter of importance; it should follow as closely as possible on the offence; the principle that justice is to be no more delayed than sold or refused is at least as old as Magna Carta, but it is frequently ignored by schoolmasters. Of course, there will often be a *necessary* delay; time must be taken for investigation and consideration; and on occasions it may be right to make a further delay for some special reasons; but any deliberate and systematic delay for mere convenience' sake must surely be wrong. Hence the writer strongly deprecates the weekly or fortnightly caning-days which are to be found in some schools; and it must be conceded that a boy who is to get a caning and wait a week for it is much more heavily punished than one who gets it the same day. For the same reason, any *rules* which prohibit the punishment being inflicted within so many hours or days of the offence are bad; they proceed on the assumption that when a man proposes to cane a boy he is probably in a temper, and he must wait until he has cooled down. Such an assumption is an insult to the profession, and rules based on it are only likely to do more harm than good.

Corporal punishment should be inflicted *in private,* or at any rate it should be recognised that a public caning is a very much more severe punishment. Publicity may perhaps add to the deterrent effect, and, if so, it would be justifiable in a case of mutiny, but in a school with any pretensions to discipline this need not be seriously contemplated.

Of course, a caning must not be given when not deserved; but what are we to do when the boy *says* he does not deserve it, but we think he does? This is one of the most difficult questions which a schoolmaster has to face; it really applies equally to all punishments, but it seems to assume more importance when the cane is in question. Some would say, "*Never* punish a boy unless he admits his offence: if he is telling a lie, take his

[1] The first article appeared in THE SCHOOL WORLD for January, 1908.

word: he will know that he has not really scored; he will be thoroughly ashamed of himself; he will not repeat his offence: whereas if he is really innocent, and gets punished, he will always resent it, and be permanently embittered." Against this it must be urged that the really untruthful boy *may* think he has scored, and his conscience may not be sufficiently shamed to make him resist a similar temptation in the future; further, that the spectacle of successful knavery must be bad for other boys, while the innocent boy, if punished, will *not* be permanently embittered if the right thing is said to him after his punishment.

On the whole, we ought probably to recognise that it may sometimes be best to punish a boy who denies his guilt; it is a hateful thing to do; one must feel very uncomfortable about it, but in spite of the possibility of a mistake, one may feel bound to do it; one can but act for the best.

The words above written, "if the right thing is said to him after his punishment," lead to a consideration which is perhaps second to none in treating of this subject, viz., that the power of the tongue must be used as well as the power of the stick. He is a wise man who knows what to say and when to say it; this knowledge comes with experience, but a few hints may not be out of place. As for time, an exhortation is not much use *before* the punishment; the boy cannot give his full attention to it; he is thinking of what is going to happen, and the best chosen words will fall on nearly heedless ears. Obvious as this is, it is not everyone who perceives it. First, then, get the punishment over, and then have your say; even still there is room for much judgment in the matter of time—sometimes it is best to speak at once, sometimes a few hours afterwards, sometimes a day or two afterwards; the important thing is carefully to choose your time, so that your words make the greatest possible impression.

And now, what to say—don't "jaw"; the boy will probably think that a beating is enough, and, having had that, he ought to be spared a still more hateful reprimand; besides that, your punishment has sufficiently indicated what you think of the offence, and you need not say it in words. You will do better to speak kindly, but without mincing matters; say a word of praise if it is possible; if the offence is one which leaves no slur on the character, say so; try to get the boy to see with you, and to be sorry for his wrong-doing as well as for his punishment; it is a mistake to break him down so much that he loses his self-respect; say that you expected something better of him, and still expect it, and try rather to build him up than to knock him down any further. If when he leaves you he is sorry, but hopeful about himself, and feels that though you have beaten him you care for him, you have probably done some good.

This completes what the writer most wishes to say, but a few words may be added on matters of less importance.

Some boys are not suitable subjects for corporal punishment; those who have "hearts" must, of course, not be touched—and a great nuisance a really troublesome boy who has a "heart" and knows it is apt to be.

One feels, too, that with a certain temperament the cane may do more harm than good, and, of course, the older a boy gets after, say, thirteen or fourteen, the less suitable does this form of punishment become; but it would not be wise to fix any definite age-limit, as boys vary so much. At many schools a form-limit is imposed—boys are exempt from the cane when they have reached a certain form in the school; but this seems quite as unwise as the age-limit, and very unnecessary; it is better to let it be known that the only infallible way of avoiding the cane is to avoid deserving it.

A practical question in school management is whether the power of the cane should be in the hands of the assistant-masters, or should rest solely with the Head. If headmasters followed their inclinations, they would probably delegate their power in almost every instance. We need not adopt the traditional humbug of "Well, my boy, it hurts me a great deal more than it does you"; but it certainly is an unpleasant duty for the inflicter. Then, too, the difficulty of deciding whether to inflict the punishment or not in any particular case when one has only indirect evidence to go on is often very great and consumes a good deal of time. The assistant-master, perhaps, who has direct knowledge of the offence feels quite sure that it merits the cane, but if he has not the authority to act for himself he has to report the case to the Head; the Head will then go into it carefully (and probably minutely); then he will send for the boy and interview *him*; as likely as not the boy will make some defence which can only be decided upon by further reference to the assistant-master; sometimes the question of previous character and reputation has to be considered, and then perhaps several other masters have to be consulted. In the result most probably the assistant-master's judgment is upheld, and the execution takes place; but how much valuable time has been consumed!

Of course, it is quite possible for a Head to accept his assistant's judgment without question; and if there is a great deal of this sort of work to be got through, this would seem to be the only way of getting through it. But the disadvantages of this plan are very obvious, and the tale of the eminent headmaster who on one occasion worked through his list of boys only to discover afterwards that he had been using the wrong list is well known. It seems best, therefore, that where the Head reserves the infliction of the punishment to himself, he should also reserve to himself the final decision, unless the waste of time is absolutely prohibitive; but the argument so far has gone to show that he ought *not* to be the only person on the staff to use the cane.

There is, however, another side; and, first, the method we have just been discussing practically ensures that the Head shall personally come across

all the least satisfactory boys in his school. He thus has the opportunity, which he certainly ought to have, of dealing with the worst offenders, and probably few of his duties can exceed this either in difficulty or in importance. Then, again, the delegation of authority to inflict chastisement may be undesirable for personal reasons; some of the assistant-masters may not be fit and proper persons to have such authority entrusted to them; a man may be an admirable master in many ways, but if he is hot-tempered he had better not use the cane, or he will get both himself and his chief into serious difficulties. There is the further consideration that where all masters use the cane, all would not use it for the same offences, and very different standards would prevail with different men; this must be true in all matters of punishment (and other matters too), but in the case of the cane it would be specially regrettable. Lastly, it is probable that most assistant-masters do not wish to have the responsibility which the power of the cane would necessarily bring. On the whole, then, the arguments for and against seem nearly evenly balanced, and this is doubtless the reason why headmasters very rarely change the procedure which they find in use when they commence their office.

At some schools the attempt is made to combine the advantages of both methods by allowing the assistants to cane, but requiring them to obtain the previous permission of the Head in every case. Like so many other theoretically good arrangements, this works very badly in practice; the men hate it, especially if permission is refused without reason and explanation, and after they have received a rebuff they are a long time before they ask again; they either disobey their chief, and act without his leave, or they wink at what they otherwise would not tolerate, and let a boy slide. Of course, they ought not to do either the one or the other, but no headmaster's influence can overcome human nature in his assistants, and these things do happen.

Nothing has been said about the offences for which the cane is most suitable. Without attempting an exhaustive list, we may perhaps mention the following: first, bullying; next, insubordination, and neglect of impositions or other punishments; a long continuance of petty offences; an impossible accumulation of punishments from various masters, which require some drastic and summary equivalent; and, of course, all offences which only just fall short of demanding suspension or expulsion. Practical joking may be added to the list when it takes a form which is dangerous to life or calculated to do serious damage of any kind, even though the joker's intention was more or less innocent.

A. Daudet, L'Equipage de la Belle Nivernaise. Adapted by T. R. N. Crofts. 94 pp. (Methuen.) 1s.—Mr. Crofts has cleverly adapted and simplified part of Daudet's delightful story, in the manner familiar from other volumes in "Methuen's Simplified French Texts." Would it not be worth the publishers' while to issue these texts without a vocabulary, but with reform exercises?

MANUAL INSTRUCTION IN WOOD.

A COURSE FOR SECONDARY SCHOOLS.

By J. W. RILEY,
Municipal Technical School, Rochdale.

I.

THAT manual instruction is an important and valuable factor in education, and is destined to be regarded with increasing favour, no one who is familiar with it will deny. When the great delight of the average youth in using tools and "doing" something is considered, together with the fact that the future life of the majority of youths will be closely linked up with the practical side of the industries of the country, it is obvious that "learning by doing" fills a want which theoretical subjects by themselves fail to supply. It is therefore natural that increasing attention should be devoted to the practical side of such education as this subject affords.

Besides training the hand and the eye, practical work affords opportunity for physical development; it is also undoubtedly recreative; and further, the mental training obtained in the preparation and interpretation of the working drawings, which are an important part of a manual training course, is of no mean value.

Although experiments have been, and are still being, made with different materials, it is doubtful if anything better than wood can be found as a medium for such training, owing to the ease with which this material can be cut, its cleanliness during working, the accuracy which can be obtained in its use, the number of varieties available, and the opportunity for using a large choice of tools which it affords. In all these respects it is undoubtedly superior to most other materials. Wood also lends itself to the arrangement of a graduated course of exercises, which, for variety of tool-manipulations, for tests of accurate work, and for scope for design cannot be excelled by the use of any other material.

The excellent opportunities for short object lessons which manual instruction affords should not be lost sight of. Such lessons will include a description of the structure of wood, the sources from which wood is obtained, the methods of transport, the processes of seasoning, the diseases to which it is liable, the different methods of preservation, and the immense variety of purposes for which it is used.

The materials from which the different tools are made, the methods of sharpening and keeping them in order, the mechanical principles involved in their use, all come within the range of instruction; while similar lessons on drawing, the relationship of the drawing to the bench work, the variety of systems of projection, the methods of scale and freehand drawing, and also the application of geometrical principles, all tend to show that the scope of the work is large and educational.

It is somewhat deplorable that manual instruc-

tion in wood is so frequently designated "joinery" because the woodworking tools employed by the carpenter and joiner are in general use. This erroneous impression—a very general one—has given to many people the idea that the work is merely trade instruction, and has created a prejudice against it. It is one of the objects of the present article to show that this idea is based on an entire misunderstanding, and that the work is no more "joinery" than it is cabinet-making, coach-building, coopering, boat-building, or any of the other trades in which wood is the chief material used. The preparation by the pupil of his own working drawings before commencing the bench work—which is insisted upon in all well-arranged manual instruction courses—in itself sharply marks off the instruction from trade teaching. Wood is used because it is the best material for the educational objects in view, and the usual carpenters' tools are used solely because no better tools have been devised for the purpose.

To obtain the full benefits from this instruction a three years' course of one weekly lesson of from two to three hours' duration is advisable. Shorter lessons do not afford sufficient opportunity to deal with all the numerous details of the work, and tend to waste time and energy. The number of pupils with which one teacher can adequately deal does not exceed twenty.

Fig. 1.—Room arranged for manual work in wood.

The moral discipline of impressing each pupil with a full sense of his ability to rely upon himself, of the need for him to arrange and carry out the work in hand in an orderly manner, of thinking out for himself the manner of best doing his work, and of showing him the dignity of hand work and the benefits to be derived from being able to control and properly use tools, cannot be overestimated.

Although much of the information needed will of necessity, in the earlier stages, be given to the pupils collectively, individual teaching should in general be the rule—with the aim of encouraging each pupil to put forth his best efforts. With the best pupils a high standard of accuracy and finish should be insisted upon; while with the dull pupil much patience, continual encouragement, and occasional help are necessary to maintain interest in the work. Care must be taken not to give too much information: the subject is an excellent one for allowing the pupil to find out things for himself, and to think out the best way of using tools; and although in performing some tool operation in the wrong way errors will occur, and as a consequence spoiled work may result, such errors are not altogether to be regretted.

The drawing associated with the work affords opportunity for acquiring a good knowledge of geometrical construction, and also scope for freehand sketches. Although it is advisable to have accurately prepared and fully dimensioned drawings for most of the work—with many of them drawn to scale—it must be remembered that the drawing is only a means to an end, and that over-elaboration, either by the multiplication of unnecessary views or the preparation of intricate sections, should be avoided. After the first few lessons, when the pupil has acquired a fair knowledge of projection, it is well to allow him to make his drawing from a model, or, as an alternative, to prepare first a rough sketch and from this make an accurate working drawing. Just as in practice a workman often works from a roughly prepared dimensioned sketch, not necessarily to scale, but in fairly good proportion, so it is advisable sometimes to allow the pupil to make a similar sketch and work from that alone. In much of the work the pupil's own designing may with advantage be encouraged and carried out, either as freehand drawing, or geometrical examples involving the use of compasses when curved lines are required.

The measurements should not be confined to feet and inches only, nor should the unit always be the same. Such a variation as the adoption of a unit of 0·25 in., 0·5 in., one centimetre, one millimetre, &c., affords variety which increases the educational value of the work.

Separate sheets for the drawings are preferable to books, the sheets being kept in envelopes or portfolios. Due attention should be paid to the "printing"—preferable to writing—of the headings, as well as to the clear indication of all measurements with dimension lines. It is well to note on all drawings the kind of material to be used for the model, and each drawing and model should be marked according to quality of work, either by the teacher or the pupil.

In arranging the workroom and its equipment it should be borne in mind that orderliness and method are the first essentials. Any special tools, other than those on the benches or in the tool

racks attached to the benches, should be easily accessible, and each pupil allowed to fetch them when needed and replace them when finished with. The writer has found it an excellent plan to arrange such special tools—each with its name adjacent thereto—around the room so that they are constantly in view. There should be an abundance of blackboard surface, and it has been found that linoleum, blackened so that it can be chalked upon, is very satisfactory. Sketches of the methods of handling tools, of the structure of wood, effects of seasoning of wood, &c., should be hung around the room. The storage space for material should be adequate and kept in order; and it is an advantage to have much of the timber "in the board," and to allow the more advanced pupils to cut for themselves the pieces they require. In drawing up a course of work due regard should be paid to economy of material, as equal advantages may be generally obtained from using a small as from a large piece of wood.

A special table or sharpening bench should be provided, at which all sharpening of tools is done, each pupil using the bench when sharpening a plane-iron or a chisel.

Although the subject affords immense scope for variation, and each teacher will develop a preference for certain ways of dealing with the work, the following detailed description may afford some useful suggestions.

The first year's course includes the use of the plane, saw, chisel, gouge, brace and brace-bits, and such measuring and testing tools as the rule, gauge, and try-square, as well as the hammer, mallet, and screw-driver.

At the first lesson no drawing is taken. The pent-up enthusiasm of the pupils warrants an early introduction to some tool whereby they can be "doing" some actual work. After, first, a brief inquiry as to what they come to learn and a removal of the erroneous idea before referred to that the work is joinery, and, secondly, a reference to the value of measurements and the part played by the eyes and ears and a full control of the hands to ensure steady, accurate work, the pupils are shown how to use a jack plane. Each pupil is supplied with a piece of yellow pine—8½ in. long, 2¼ in. wide, and 1 in. thick—which has one side and one edge already planed straight, and at right angles to each other. These planed surfaces are called respectively the face side and the face edge. Each piece has also been gauged to the width (2 in.), and after being shown how to use the plane the pupils are allowed to plane the rough edge to the gauge lines, thus reducing the material to the exact width required. By starting with the block, say, ¼ in. wider than the finished size, this exercise affords an introduction to the plane. "Watch the lines and do not plane below them" is the motto. The proper method of handling the plane needs to be emphasised and undue haste deprecated, especially in the early stages of the work.

When this work of planing to the width has been accomplished, the pupils are again called round the demonstration bench and are shown how to use the marking gauge. "First plane the remaining rough surface, and then place gauge marks—say ⅛ in. apart—upon this surface." This operation affords excellent practice in using a tool—the marking gauge—which often proves more difficult to master than appears at first sight. After this gauging practice the pupil may himself gauge his block to the thickness required, and then proceed to plane the surface to the gauge lines, and thus reduce it to the finished thickness. This accomplished, the ends are cut off "square"; an operation introducing the tenon saw. This work can generally be completed in a lesson of two and a half hours' duration. Should time allow, a brief explanation of the plane, its cutter, the material from which it is made, and the advantages of its use may be given, although such information will of necessity have to be repeated later.

At the second lesson a drawing must be first prepared. Each pupil is in possession of the block previously prepared by himself, which is 8 in. by 2 in. by ¾ in., and he proceeds to draw

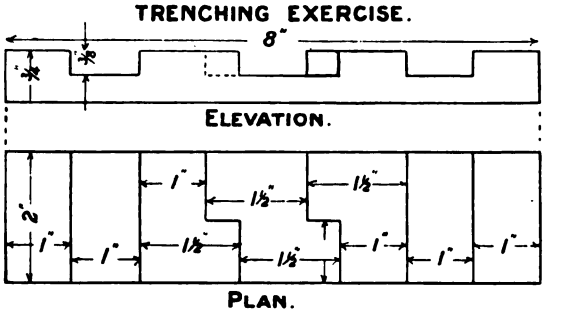


FIG. 2.

in plan and elevation a geometrical projection of it. As trenches (grooves) are to be cut on one face of this block (Fig. 2), these trenches must be shown on the drawing. In obtaining the positions of these trenches the teacher will have a completed model, and it is best also to illustrate the trenches upon the blackboard pictorially (in isometric or oblique projection), rather than as the pupils have to draw them. The use of rubber in obtaining the outline should be discouraged, and the outline completed before any lining-in is attempted. After lining-in, dimensions must be inserted, the pupils being allowed to suggest where they are to be placed, and how many are required. Headings are "printed" and the drawing is completed. This lesson will afford opportunity for explaining the use of tee-square and set-square, the importance of accurate measurements, and an explanation of the meaning of the terms plan and elevation.

The bench work for this exercise consists of first marking out the trenches upon the face side of the material to the sizes shown on the drawing, gauging them to the depth—here will be shown the advantage of using a gauge when several lines of the same distance from the edge

are needed—and the trenches are then ready for cutting with the saw and the chisel. When the pupils are being shown how to saw the sides of the trenches the cutting action of the saw may be explained. It will be seen that a saw-cut has width, the amount depending upon the thickness of the blade of the saw and the amount of "set" upon it. "How does a saw cut?" may be asked. It is really a plucking action, each tooth hooking into the fibres of the wood and removing a small particle. To illustrate this, take a hand cross-cut saw and also a rip saw. In a piece of wood, say, 1½ in. thick, cut with each saw, in the direction of the fibres, an equal number, say twenty, strokes; notice the difference in the length of the saw-cut. Make similar cuts across the grain with each saw; notice the cut surface in each case. The cutting of the saw may be compared to the cutting, or rather scraping, action of a large number of narrow chisels following each other in rapid succession, the angle at which the chisel acts being

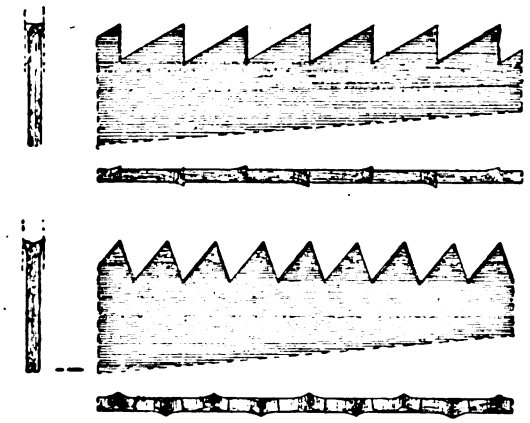


Fig. 3.—Diagram to show the teeth of the rip-saw and the cross-cut saw.

the same as the angle which the front edge of the tooth makes with the cutting edge of the saw. "What is meant by 'set' on a saw?" It may be defined as the bending of the teeth out of the plane of the blade (Fig. 3) to produce a groove wide enough to allow the saw to work freely in the groove. It will naturally be pointed out that alternate teeth are bent in opposite directions. The amount of set which a saw requires depends upon the uses to which it is to be put. Thus, a rip saw does not require so much set as a cross-cut saw, because the fibres are separated more easily along the grain than across it, while a saw used for cutting rough unseasoned material must have more set on it than a similar saw used for dry material. The method of sharpening and setting a saw will also naturally come under notice. When using the saw for cutting trenches it must be pointed out that, as a saw-cut has width, a cut made to a line must be on one side—the inner side—and must not contain the line itself.

Although it will be necessary to show how the chisel is used in cutting the trenches, it is not advisable to deal fully with the cutting action of the chisel at this stage, especially if the saw has been explained as described above. After sawing the sides of one trench, fix the material in the bench vice, and, grasping the chisel handle with both hands—the face side of the chisel being against the work—cut out a little at a time, and gradually remove the surplus wood between the saw-cuts and the gauge line. After cutting one trench and testing it for accuracy of measurement and straightness, proceed to cut a second trench with the endeavour to improve upon the first one. The sides of the middle trench, owing to its shape, can only be partly cut with the saw, the remainder of the cutting being done with the chisel. This cutting affords opportunity for showing how much more difficult it is to cut *across* than *between* the fibres of the wood. Constant comparisons between the bench work and the drawing should be urged.

In the present article an attempt has been made to describe principles which experience has shown to be of great importance, rather than to outline a complete course. This must be reserved for the two succeeding articles of the series.

THE EDUCATION OF GIRLS.[1]

THIS work may fairly claim to be a comprehensive manual on all that pertains to high schools for girls, and to the newer secondary schools which are springing up by reason of the Act of 1902.

One of the desiderata of a book of this kind is an exhaustive index: for some reason or other the talented writer has omitted this valuable adjunct and thereby seriously impaired the usefulness of her labours. We trust that she will provide an index in subsequent editions. This is our only grumble.

Miss Burstall sketches carefully and impartially the rise of public secondary education for girls in this country, from its origins in the labours of pioneers such as Miss Beale and Miss Buss down to the permanent form which the Girls' Public Day Schools Company gave it and its newer development under the local authorities. Without in any way disparaging the merits of the volume, which are many, it is obvious that the labour of writing a book of this nature must be considerably lessened owing to the limited period which the origins cover. The *terminus a quo* is very clearly marked, and incidentally we may observe that it is precisely this recent development of the high school for girls which has made its growth and organisation comparatively easy of accomplishment.

Once the initial prejudice was overcome, the way was smooth: no shackles of tradition had to be broken: no long-standing dogmas blocked the way. Yet there is one danger to which atten-

1 "English High Schools for Girls: their Aims, Organisation, and Management." By Sara A. Burstall. xiv+244 pp. (Longmans.) 4s. 6d.

tion must be directed, one stumbling-block ahead which may well retard and delay future progress. It is impossible to read the volume before us and to study the various time-tables which are here reproduced without being struck by the fact that girls' education—as regards curriculum—is being developed, and consciously developed, along the lines of boys' education. Rightly or wrongly, the Board of Education has not so far treated girls' schools on a separate plane. What is good for the lad is held in the main to be good for the lass, and we have thereby reached an epoch when, owing to the regulations of the Board, the time-table in girls' schools is approximating more and more to that in vogue in boys' schools, particularly to that in use in the new secondary type. Evidence of this is not far to seek, and Miss Burstall's volume does but confirm what is already common knowledge with regard to some aspects of the question. In dealing with the curriculum, p. 109, the writer observes: "Next will come either Latin or German, for those who have time and ability to learn more than one foreign language. Latin is at present elbowing German out of girls' schools; a clever girl can, however, learn all three, German last."

Surely we may well pause and ask the question whether we are not organising our girls' education in the interests of the select few who are destined in after-life to enter the professions which may be open to them, and neglecting to develop an education more suited to the needs of those whose *rôle* in life is likely to be less conspicuous but far more valuable. That Miss Burstall herself is alive to these difficulties may be gathered from her remarks on the subject of mathematics for girls, p. 110.

It is impossible within the limits at our disposal to do full justice to the book before us. It is a book with the contents of which all teachers should make themselves familiar, and we can give it no higher praise than to recommend it for perusal to the British parent, who looms somewhat largely in the vocabulary of teachers, but whose influence could be made a most valuable factor for good, if he could but learn to pass from the individual to the general and to familiarise himself with the actual state of education in England, its present position and its future needs. We cannot do better than quote, in conclusion, a short passage in which Miss Burstall sums up the present position of affairs; for it conveys some idea of the breadth of view and sympathetic treatment which her volume displays.

> The organisation of education in England is one of very great complexity and difficulty, since it is a compromise between ideals to all appearance incompatible and irreconcilable. Such is, indeed, the character of our political system, our national organisation. We do not eliminate our minorities; they and the majority find a *modus vivendi* somehow or other for common citizenship. In our education we will not sacrifice character to knowledge, spiritual ideals to practical needs, science to humanities; nor will we reverse the process; we mean to have them all. We neither ignore social distinctions as America does, nor isolate social classes in different schools like Germany. We welcome their mingling and fellowship in the work of the State and the halls of the professor, and we adjust our conflicting systems by contempt for logic, implied understandings, and, best of all, by mutual respect and toleration.

A BOOK FOR STUDENTS OF HOMER.[1]

THERE is no doubt of the value of a book like this, whatever may be the view taken by the reader of the Homeric question. We cannot do better than to give the author's aim in his own words. "A handbook which endeavours to cover the whole field of Homeric antiquities must be content with registering the most important facts in regard to the life which the poet depicts, and seeking to make clear the relation between these facts. It cannot enter into the question of origins and pursue inquiries as to the connection between these facts and an earlier period of civilisation." And so the author collects the statements of both "Iliad" and "Odyssey," and classifies them under eighteen heads: cosmography, the State, the family, dress and decoration, house and furniture, food, property, servitude, trade and crafts, sea and ships, agriculture, animals, the gods, Hades, worship, the Troad, war, and arms. It will be seen from this summary that the book contains the maximum of information and the minimum of controversy. Its value is therefore independent of the phases in the war of Wolfians and anti-Wolfians, Pelasgians and Achaeans, and so forth, while it gathers material ready for the use of any combatant. In the most controversial chapter of all, that on arms and weapons, Mr. Seymour seems to us to steer his way cleverly, and to give the essentials of the matter without prejudice.

It is a pity, we think, that the author did not see fit to examine the poems comparatively, and to see if any differences could be made out which might have thrown light on their relation in time. Prof. Geddes, it will be remembered, based his analysis of the poems on this principle, and no one would be so well fitted to see the weight or unsoundness of the method than one who, like Mr. Seymour, has himself collected the facts. It takes vast time and trouble to classify statistics, but often enough valuable results follow. Mr. Seymour also seems too merciful to Doerpfeld's theories of Ithaca and Leucas. No doubt it is true that the geography of Ithaca does not exactly correspond with Homer's description; but neither does Leucas; and it should not be forgotten that the new hypothesis is built up on an unwarrantable assumption of wholesale migrations, in which the migrating peoples took with them their place-names; for the name of Ithaca has been attached to the traditional site from classical times.

Mr. Seymour has accomplished a feat in making

[1] "Life in the Homeric Age." By T. D. Seymour. xvi+704 pp. (Macmillan.) 17s. net.

his book quite readable, although he has included in it practically everything and has given exact references for each statement. This implies not only prolonged study but great skill, and we congratulate him on the result. His severe method leaves no room for comment, and there is fortunately very little trace of that provincialism so often seen in American books, where unknown places or persons or ephemeral books are cited in illustration. The book deserves to be in the hands of all students of Homer.

CHILD-STUDY AND THE TEACHER.[1]

INTEREST in child-study is making rapid strides amongst those most concerned with the training of the young. There is, in the subject itself, a kind of fascination which tempts to its investigation some who hardly realise the complexity of the problems involved, or the need for adequate preparation, without which results of real value are not likely to be reached. Dr. Drummond wisely lays considerable stress upon the importance of tempering enthusiasm with caution, and explains why the investigator must first submit to a certain amount of self-preparation in order to fit him for the work. Owing to a lack of those initial requirements, not a few of the tables of observations which have been given to the world are, in practical value, disappointing out of all proportion to the time and labour expended on them. They possess a certain intrinsic interest, and they are usually more or less amusing in parts, but they lead nowhere in particular; and they often are, by reason of inherently faulty methods, far from trustworthy as mere records of fact.

After describing the methods of study, the author deals with growth and development in their combined biological, physiological, and psychological aspects; tracing in this way the development of both body and mind, indicating the dangers which beset the child's expanding life, and the methods by which its innate forces may be wisely guided.

The book may be recommended for study to every teacher who desires to practise his profession intelligently, with something like a clear realisation of the complex material with which he has to deal, and of the how, and when, and in what order there are evolved within it those forces which he has to cultivate and to train in preparation for a future which will be beyond his reach. For school is only the beginning of training, too often inefficient; sometimes even wrong.

There are two interesting chapters on the Child's Religion, and on Some Moral Characteristics of Children. The closing paragraph of the latter has a significant application in relation to the position of the child of the future, as arranged for by the modern Socialist:

> The unity of the child's life, again, should put us on our guard against the danger of producing an artificial isolation of the purely animal instincts. This danger is undoubtedly increased by depriving young people, during the school period, of the natural social intercourse of family life. The value of whatever instruction is given depends in only a minor degree upon the amount of specific instruction, but to a very high degree upon the general tone attending the presentation of the subject, and this can in no manner be so guarded as by association with all that makes home sacred.

[1] "An Introduction to Child Study." By W. B. Drummond. 344 pp. (Edward Arnold) 6s. net.

THE CHRISTMAS VACATION EDUCATIONAL CONFERENCES.

IT is impossible, within the space at our disposal, to give a full account of the numerous meetings of educational associations held during the recent vacation. Following our usual practice, the topics most likely to be of service and interest to practical teachers have been selected for comment, and these paragraphs, with other references in the present issue, will direct attention to some of the more important discussions at the annual conferences of this year.

Greek at Entrance Scholarship Examinations.

At the second day's meetings of the Headmasters' Conference, Dr. Burge moved a resolution, which was eventually lost, "That this conference is of opinion that undue pressure is put upon boys at preparatory schools by the requirements of scholarship examinations at the public schools, and that in the interests of education the best remedy lies in lowering materially the standard of knowledge required in the Greek language." Preparatory schools are suffering, he said, from the disease of pupils being over-taught and of teachers over-teaching. This pressure is greatest in Greek. Boys who have been learning Greek two or three years are expected to translate difficult unseens, and the worst of it is they can translate them. This result is attained by learning the tricks of unseen translation at the expense of subjects with which they would be better occupied at that age. He suggested that the conference should agree upon a standard of requirement in Greek for scholarship examinations such as is represented by Dr. Rutherford's Greek primer, with sentences, both Greek-English and English-Greek, based on that grammar, and that no credit should be given for any knowledge beyond that standard.

The headmaster of Eton, in seconding the motion, said the preparatory-school masters are in a difficult position for arriving at unanimity on any subject. The competition amongst them is acute and increasing; for many of them there is so much anxiety as to the continued prosperity of their schools that they must be tempted to think, first of all, how any educational question will affect the schools. In spite of this they are nearly unanimous. The opinion of some hundreds of men who alone have a right to speak on the matter must not be ignored. No one has answered the question, How is it that a state of things is countenanced which forces little boys to learn three languages at once? The standard of Greek for entrance examinations has been lowered at Eton, and the result has been sounder elementary knowledge; but the preparatory schools are dominated by the scholarship examinations. He aimed at requiring so much of the rudiments of Greek as will take a fair amount of teaching in a boy's last year at a preparatory school. The future of Greek is uncertain; but one question must be answered: Are the benefits conferred by Greek on the mass of boys sufficient to allow us to

continue a subject so remote from practical life? This argument is irresistible, unless it can be shown that boys gain something from Greek which they cannot gain from Latin, and, further, that Greek is being taught as well as it can be taught.

Dr. James wholly disagreed with inferences drawn by previous speakers. The fact is, he said, that boys love Greek very much more than the modern subjects which have been comparatively neglected at preparatory schools. As to tricks of unseen translation, there are no such tricks; training in translation cannot be crammed and is vitally important. He denied the existence of over-pressure to any serious extent as against his experience. There may be some masters who do anything to get a scholarship, but this is rare in preparatory schools. At Rugby, boys who have taken scholarships do not break down. He does not hold that specialisation is bad. Some years ago he established two scholarships a year for all-round merit. If there are any signs of cramming it is among the competitors for these—these are the mere mark-getters! Specialisation does no harm to a boy's intellectual development. He opposed this attack on Greek on every side. It has been attacked from the side of the universities; a year ago it was attacked at the previous conference from the side of entrance examinations; but the present attack is least justified of all, because it deals with the very boys who least need the relief. He strongly deprecated the attempt to cut out Greek, because it is one of the most valuable subjects, and his experience shows him that boys cannot begin it later without suffering in the later years of their school life.

Many other masters took part in the discussion.

Nature-study and Botany.

At the first day's meetings of the conference of teachers arranged by the London County Council, Dr. T. P. Nunn delivered an address on "The Place of Nature-study in the School Curriculum." He said in the evolution of the scientific process there are three stages. Highest and latest, there is the stage of system, pursued for its own sake, and outside the ken of the elementary school and hardly within that of the secondary school. Then before this falls the utilitarian stage, in which the bulk of elementary science teaching comes, while the foundation of all is the nature-study stage. It is an error to suppose that these stages are separated from one another by clear lines of demarcation. Nevertheless, the three stages have characteristics which determine the extent and method of instruction in each. Nature-study and the science instruction which follows it afford a striking example of the organic connection which characterises the parts of the curriculum as a whole. Only too frequently it happens that topics admirably chosen for their purpose—such as the study of rainfall, of sun shadows, of the "sleeping" of flowers—which are introduced in the nature-study stage, receive appropriate treatment there, but are then allowed to drop. This is a mistake. The simple study of rainfall should lead in a direct line through the investigation of dew-point to hygrometry, the measurement of vapour pressure, and so on to the doctrine of continuity between liquids and gases. In this way the science instruction becomes a firmly knitted and continuous growth.

In introducing the subject of the teaching of botany, Dr. Forman, who presided, said that in the year ended March 31st last there were despatched from the Council's depôt about 7,500 boxes, containing more than 5½ millions of botanical specimens, for the use of the schools. Facilities are afforded to pupils to visit, in charge of the teachers, the Council's botanical gardens for the purpose of observation lessons in connection with botany and nature-study.

Miss Lilian B. Clarke, senior science mistress of the James Allen School for Girls, Dulwich, delivered an interesting address on "Botanical Laboratories and School Gardens," which was illustrated by limelight views. She said that at Dulwich they have tried for years to teach botany by means of the observations and experiments made by the girls themselves, with the aid of a special laboratory and school gardens. The laboratory was the first of its kind, and has helped greatly in the efforts to learn about plants by means of observation and experiment. The gardens were begun more than ten years ago, and at the present time more than 120 girls have gardens, the chief of which are devoted to classification, pollination experiments, climbing plants, assimilation experiments, soil experiments, and growing plants in soil similar to that in which they occur naturally, and watching the effect of the soil on the plants.

Manual Work in Lower Classes.

At the third day's meetings of the London conference, Dr. Slaughter, late assistant to Dr. Stanley Hall, of Clark University, United States, delivered an address on "The Need of Manual Training in the Lower Standards." He said thought is really nothing more than truncated action. A fact which comes out of scientific investigation with prominence is that the human body is no longer separate from the human mind. Manual training methods are open to criticism. He, however, bases his hopes for the education of the future on such training. It is obvious that manual training in the lower standards should be on as broad a basis as possible. Perhaps the greatest shortcoming of modern educational methods is that we aim too much at the acquisition of technique. Manual training to produce results must have its daily use and educational value. It should give knowledge about geography, animals, plants; it should make use of drawing, and, in short, it should have a large adaptive educational value. With the extension of manual training methods in the lower standards, certain limiting conditions must be observed. It is absurd to coop up together boys of six years of age and ten years of age and get them to do the same things. On the whole, the question is one of the most serious that confronts teachers. Physically, we are a degenerate race; in intellect, we are drowning ourselves in printers' ink; we have lost contact with the real things of life. The problem of utilising the natural activities of children, of making the body an instrument of thought, as well as of cricket and baseball, writing or composing, and the narrower things of life, is one of the most serious that will confront the educationist of the future.

Mr. P. B. Ballard, district inspector of the London County Council, pleaded strongly for the introduction of more motor training into the schools, not as a new branch of instruction, not as an additional subject to an already overloaded curriculum, but as a method—an additional means by which the ordinary school subjects may be taught, a device for making all the lessons more real, interesting, vital, and effective. In the matter of motor training, development must proceed from within the present curriculum, and must not be foisted upon it from without; it must be a natural, not an adventitious growth. The present course of studies must be leavened through and through with the principles of motor activity, and the leaven should be allowed to work. He suggested that in certain selected schools some course of constructive

handwork should be tried; if the scheme succeeded, it would spread to other schools. The ideal system to which we are slowly moving is that which requires a manual training room in the school. Handwork must co-operate with all other subjects, and not compete with them.

Medical Inspection of Schools.

Dr. Dukes, dealing with the medical inspection and treatment of school children in primary and secondary schools at the North of England Conference at Sheffield, said the nation cannot bear the financial strain of appointing two sets of officials: a medical officer to examine the children and a nurse to carry out his instructions. The Scandinavian countries, which have ever been in the van in the medical examination of school children, do not pursue this course of subsequent medical treatment. The nation should not be required to undertake the arduous duty of putting into practice the suggestions made by the medical examiner. If this were done, the parents would only be rendered more helpless and heartless; this abstraction of their natural duties would result in a further deterioration of parental character, and neighbouring medical practitioners would be deprived of a large portion of their living.

The inspection and examination should comprise the primary and secondary schools, including the endowed public schools within the county area. There will be a strong opposition to the inclusion of the endowed public schools, since, at present, they are exempt from inspection. But in the section of school hygiene at the International Congress a resolution was proposed, and carried by acclamation in a crowded meeting, praying that the Board of Education would take such steps as are necessary to include these schools.

The Teaching of Housecraft.

Miss Maud Taylor, who read a paper on this subject at the Sheffield meeting, remarked that if teaching had necessarily been guided by a domestic outlook, girls of eleven years would come to their special subjects' course with a proper appreciation of its teaching—interest and mental ability ready to make the most of it—and there would be a very different demand for better teaching of cookery, laundry-work, or housework. The present teaching is too often a series of lessons in manipulation, accompanied by strings of "rules"—rules for frying meat, rules for washing flannel, rules for sweeping floors. "Principles to be taught" heads a column in many a syllabus, but the simplest and fundamental principle is overlooked in "rules to be remembered." Manipulative skill of any efficiency can only be gained in a short course at the expense of sound teaching—a long row of nice little jam-tarts on a well-scrubbed table may be a pleasant ending to a lesson, but it does not guarantee that a girl's education has advanced in the least. As a school subject, housecraft should be taught with more attention to its "why and wherefore"—why the processes are necessary, why we deal with them on certain lines, and what constitutes success and failure will give girls a more reasonable understanding of their work and enable them to carry it out in the varying conditions of their homes. If a girl is once taught to stew, she should be competent to stew anything so far as carrying out the actual process is concerned—able to make use of heat from an open fire, an oven, or a gas stove. Experience of a lesson on "stewing" shows that at the end of the lesson the girls know how to cook one stew, and that only under conditions that are manifestly unknown in their own homes.

The proper place for teaching the fundamental principles of housecraft is the laboratory, and in every school there should be small gas cookers beside the bench and sink of the laboratory. A lesson might begin in a test-tube, but it should end in a saucepan. We need seldom sacrifice our science teaching proper, and we should gain in many ways by developing reasoning along the lines of natural interest by bringing a scientific attitude of mind to bear on daily life, and we should encourage a love of research that would eventually benefit the whole community. Such science would prepare the way for a course of practical housecraft under a specially trained teacher. For a certain section of girls this would be combined with the subjects of the final year's work, but wherever it was possible the course should be made post-scholastic, and a year at least devoted to it.

Who is to teach under these conditions is the practical difficulty of immediate reform. So far as the secondary school is concerned, we need the science mistress made domestic and the domestic mistress made scientific, neither operation being outside the region of practical politics. Every science graduate who aspires to teach in a girls' school should take a further course in a training school of domestic science, with a view to the proper illustration and application of her laboratory work. The student in a training school preparing as a teacher for secondary-school work should take a course of science in addition to her training in domestic subjects. When actually engaged in teaching, these two teachers would consider themselves inter-dependent.

Miss Cleghorn said that much attention in the past has been devoted to the right curricula for the education of the boys, and the girls have been left to follow similar lines of study without much consideration as to whether it is the best possible for their future work in the world. With what result? The working men of to-day, the clerk, the typist, the secretary, complain that they cannot get situations because so many posts are taken up by the women, who will do the same work at a cheaper rate. And why not? They have been trained on the same lines as the men, they have equal brain power, often more application, and, above all, they are cheaper. And so the mistress complains she cannot get good servants—the working man too often gets an ignorant, helpless wife, and our boasted English home life is becoming a thing of the past.

What do we teach the girl in our elementary school to fit her for what in the long run is her vocation? We teach her to read. Are we not all familiar with the plaint of the modern mistress of her novelette-reading "general"? We teach her to write, to draw, to sing, even to paint. She learns—and soon forgets—a little geography, a little history, and something of English. She is fairly proficient with her needle and has had lessons in cookery. If she has the privilege of living in a large urban centre, she may also have had lessons in the theory of domestic economy, and even some instruction in laundry-work and housewifery; but, omitting cookery, the teaching of which is pretty general, the great majority of girls receive no practical training in housecraft. And so we turn the girl out. What becomes of her? In many cases she goes directly to the mill or the factory; in others she remains at home, the baby-minder, mostly to be seen wheeling a perambulator or carrying one child in her arms and guiding the footsteps of another, keeping the children out of the way while the mother cleans her house and cooks the dinner. Sometimes this product of our elementary-school system goes to service and becomes a drudge, washing steps, nursing babies, running errands

—at the beck and call of every member of the family of which she becomes a member, hopelessly incapable, utterly ignorant of the right methods of doing what she is hired to do. Whom shall we blame? The girl who is expected to know what she has never been taught or the mistress who has neither the time nor patience to teach her?

PUPIL TEACHERS IN SECONDARY SCHOOLS.

Miss Byles, headmistress of the Salt Girls' High School, Shipley, read an important paper at the North of England conference on the mode of preparation of the primary teacher before entering the training college. She pointed out that secondary schools have already done much to raise the standard of education among pupil teachers. By associating intending pupil teachers on an exactly equal footing for two years with companions whose careers are to be very varied, the narrowing effect is avoided of isolation with others all bound for the same goal. Again, young people of the industrial class, whose parents are often not so well educated as themselves, are thrown into contact with boys and girls of the middle class in all its grades, and, happily, on the playfield and in the classroom social distinctions tend to vanish. Hence the secondary school has a humanising and broadening influence which cannot be attained through the centre, and this influence is enhanced by the larger teaching staff generally possible in a secondary school. Specialisation, which in all branches of industry and education is by itself too apt to narrow development and to kill the nobler aspirations, is nevertheless one of the great secrets of modern success; and, again, it is much to the advantage of the pupil teachers that in secondary schools they may be taught by specialists. The organised games, clubs, and societies of various kinds which belong to secondary schools foster the spirit of *esprit de corps* which is so marked a feature of good schools; and the higher standard of manners, and, in the case of girls, the better taste in dress, have a salutary influence.

On the other hand, there is perhaps some danger that the educational ideals of secondary schools may be lowered by the influx of pupil teachers. In the case of new schools with this as a predominant element, the characteristics of a pupil-teacher centre, rather than those of a good secondary school, will tend to reproduce themselves, and it is to be hoped that inspectors and local authorities will seek to minimise this danger. Many of the older and better secondary schools are not opening their doors very widely, if at all, to pupil teachers, perhaps because of the fear that fee-paying scholars would be withdrawn if they did so, or that the educational standard would be lowered, or that the manners and morals of the school would deteriorate, or because of the great difficulties of organisation. In regard to the first of these difficulties, the answer seems to be that class distinctions should not be allowed to limit the usefulness of public schools. The other dangers are perhaps over-estimated, and will tend to disappear when the age of entering is universally lowered to twelve. Also they are already largely counterbalanced by the number of pupils in the schools who are determining upon the career of elementary-school teaching.

THE TEACHING OF MODERN LANGUAGES.

Mr. Storr, the president of the Modern Language Association, delivered an address at the annual meeting of that body on the art of translation. No language, he said, can exactly reproduce the single words, let alone the connected phrases, the rhythm and harmony of another language. Each language has its own idiosyncrasies; words are like coins, each with its own image and superscription, for which no exact equivalent in a foreign coinage exists. Even that metaphor is inadequate, for a word is a living organism, ever taking to itself new accretions and shedding part of its substance. Translation is an art, but it has very slowly been recognised as such, and in no art has theory lagged so far behind practice. There is a plain issue between the literalist and the spiritualist schools, and he unhesitatingly took his stand on the text, "The letter killeth, but the spirit giveth life."

Mr. E. L. Milner-Barry moved a resolution, which, after an interesting discussion, was adopted: "That this meeting, considering it desirable that greater encouragement should be given to the study of German in schools, urges the Board of Education to reconsider its policy that where only two foreign languages are taught in a school one must be Latin, unless good reason can be shown for its omission." He said the resolution deals specially with schools which are in receipt of a Board of Education grant; it does not apply to schools which may be termed non-local schools, which are outside the jurisdiction of the Board. In the Board of Education schools in receipt of public money, where the leaving age is often sixteen, German very often goes to the wall. He found that in 119 of our secondary schools in receipt of public money, while 16,668 girls and boys are taught French, only 3,224 are taught German. And in forty of the girls' schools, while 5,291 girls are taught French, only 765 are taught German. This shows what a parlous condition the teaching of German has reached. The Board of Education, it appears, is wedded to Latin. An appeal should be made to it and to the local authorities to have schools where, instead of the classical tongues, English, French, and German should be taught on sound lines.

Mr. F. B. Kirkman opened a discussion on "The Place of Translation in Modern Language Teaching." The reformers wish, he said, only to use translation when it is the best means at a particular stage. In the first stage, the teaching of the meaning of the words, the reformers agree entirely that translation is one of the legitimate means of giving this teaching. At the next stage, the practising stage, where the object is to familiarise the pupil with the use of the spoken and written language, they feel that translation must be rigidly suppressed, except where it happens to be necessary as a test of whether the pupils are profiting by the instruction. How far translation should be used in examinations is, he thinks, an open question, but he would exclude prose composition and prose translation from all junior examinations. He is convinced that free composition is the most searching test we can have in examination. Translation teaches felicity of expression, but there is one thing it cannot do: it cannot teach pupils how to connect their paragraphs—how to compose. The aim is not to make a clean sweep of translation, but to give it its proper place in the curriculum.

THE TEACHING OF ENGLISH.

At the annual meeting of the English Association, Mr. J. H. Fowler read a paper on English literature in secondary schools. He said there are certain dangers against which teachers of English must be on their guard—the dangers of impressionism, sentimentalism, specialisation, and materialism. There is the danger of substituting for the old-fashioned study of books read at a painfully slow pace a mere hazy impression of the history of literature; the danger of a revolt against accurate and scientific study; the danger of isolating the study of English from other studies; and the danger of ignoring the spiritual side of literature.

Prof. Raleigh, in acknowledging a vote of thanks to him for presiding, agreed that English literature and composition are two subjects, and English literature is one of the worst classes in which to teach English composition. A better occasion is afforded in the teaching of history, if it is taught with due regard to expression. In science classes the teaching of succinct and lucid statement is possible. In classics there is the art of translation, whereby expression can be taught. Looking back to the teaching of literature in his own childhood, he remembers, he said, probably with the keenest pleasure the beauties of an author with whose works he had made acquaintance in an apple-tree instead of in the class-room. Such a pleasure, he thinks, the rising generation may to some extent be robbed of. We do not teach children to fall in love, yet we introduce them to literature, which is almost as difficult and dangerous a matter, for the introduction to literature in any full sense is an introduction to life itself.

Mr. Sidney Lee, dealing with the teaching of Shakespeare, said we know how easily Shakespeare may lose all his magic charm for children unless the teacher adapts his method to the necessities of the case, and may come to be regarded, not as a mighty influence stimulating the mind and heart, but as an uncongenial taskmaster to be abandoned with relief on leaving school. If there is any likelihood that the inclusion of Shakespeare in the school curriculum must yield such a result in the average pupil, it would be far better to exclude this study altogether. The danger is a real one. Shakespeare must never become "the drill'd, dull lesson," must never be metamorphosed into a daily drug. At all hazards we must prevent pupils from flinging away their Shakespeare on leaving school as Byron flung away his Horace. The first step in the study of the poet is of the highest moment. It is for experts to decide the questions involved; but Mr. Lee thinks that some such book as Lamb's "Tales from Shakespeare" should be brought to children's notice at the very earliest age at which they can comprehend what they read.

Secondary-school Teachers as Civil Servants.

Prof. Sadler read a paper on this subject at the annual meeting of the Assistant-masters' Association. Speaking, first, of the advantages which would be likely to follow from the organisation of the teaching staff of secondary schools as a branch of the Civil Service, he said the change, if it ensured to every qualified teacher a progressive salary, with a pension at sixty years of age, would remove a grave element of weakness from English secondary schools. The improved prospects opened would increase the supply of competent men, and maintain the supply of competent women, candidates. The change would be quickly followed by the enforcement of some form of professional training in the duties of teaching and by enhanced requirements as to intellectual preparation. It would involve an alteration in the conditions of the tenure of assistant-teachers, and entail financial readjustments which would lessen any unfair disproportion existing between the salaries of the headmaster and his assistants. The change would have great disadvantages. It would increase Government control over the inner life of secondary schools at a time when experiment and free development are especially necessary in English secondary education. It would impair the individuality of character of different schools. The conditions likely to be imposed upon those wishing to become secondary-school teachers might, in laying special stress upon intellectual fitness, take too little account of the other qualifications which are necessary for what is essentially a pastoral office. But the central difficulty of the situation lies in the fact that the teaching profession is, by the nature of its duties, on the border-line between private employment and public service. The best interests of the teaching profession may well be injured by the enforcement of rules of individual subordination which are salutary in a purely public administration. If men secondary-school teachers are included in the Civil Service, it will be unfair to exclude women teachers. The case of the elementary-school teachers, and possibly of the university teachers, would come up for corresponding treatment. The cost to the State of paying an average income of £200 per annum to the secondary-school teachers required to educate efficiently 14 per 1,000 of the population of England would be more than £600,000 a year, though a part of this expenditure would be met from endowments and fees. In present circumstances, at any rate, the best interests of higher education in England would not be served by making secondary-school teachers Civil servants. It is possible to protect assistant-teachers against the risk of unfair dismissal, to raise their average salaries to a suitable level, to facilitate and enforce suitable professional and intellectual training for their work, and to provide them with pensions on retirement at sixty years of age or in cases of earlier incapacity for their duties. Prof. Sadler suggested the formation of a small committee of appeals, which should be competent to hear both sides, and expressed the opinion that the salutary influence of such a tribunal would be felt rather in the avoidance of disputes than in its just determination of cases which actually came before it.

The Teaching of Mechanics.

A discussion on the teaching of mechanics was opened at the meeting of the Association of Public School Science Masters by Mr. C. F. Mott, of Giggleswick. It is necessary, Mr. Mott maintained, for a boy to be well grounded in mechanics if he is to make any satisfactory progress in physics, or even chemistry; without this foundation the study of heat is impossible, whilst the simplest electrical measurement remains beyond his power until he has grasped the meaning of "a unit pole," a unit which depends entirely upon dynamical reasoning; in chemistry it is impossible to understand the laws of the diffusion of gases unless the student has at least some knowledge of the laws of motion.

Mr. H. Wilkinson, of Durham, followed with a paper upon the teaching of practical mathematics. He suggested that it is necessary to introduce more human interest into mathematical teaching. The average mathematical master is too inclined to think that "practical" as applied to his subject means only that it touches the possibilities of daily life. He may consider it wrong to give a boy a problem in which the price of tea works out to 3*s.* 6*d.* per pound, because the pupil would know that Lipton's best is only 1*s.* 7*d.*; on the other hand, if the answer comes out to the latter value, the question is too often considered to be "up-to-date" and practical! It is the duty of the science master to rescue his mathematical colleague from this perverted view. Practical methods are yielding good results in geometry, and should be applied to the whole of elementary mathematics. Probably the chief difficulty confronting every science master is the bad arithmetic of the average boy, who, like the celebrated Chancellor, seems to have no idea of the meaning of "those —— little dots." This difficulty can be far more easily overcome by means of practical work than by ordinary class-room methods. The question of cost is less

serious than is generally believed to be the case, and it should be emphasised that, as a rule, the cheaper the apparatus the greater is its educational value. Mathematical masters must, however, be prepared to undertake the work themselves; the science staff has already as much as it can do.

THE TEACHING OF PHYSICS.

In the afternoon the members of the association were occupied with a discussion upon the teaching of physics. Mr. Cumming gave an account of the scheme in force at Rugby School. He said that it can hardly be doubted that science teaching has not yet advanced beyond the experimental stage. Prior to 1904, science work at Rugby consisted chiefly in experimental lectures, some laboratory instruction being compulsory, but there was an inevitable lack of co-ordination between it and the lectures. Since that date, the whole science teaching has been based on laboratory work, each set spending one and a half hours at the subject, one hour being devoted to experimental work and the remaining thirty minutes in the lecture-room being sometimes occupied by informal lectures upon the subject of the next week's experiment, sometimes in working arithmetical examples designed to focus the pupils' minds upon the principles which the last laboratory work had been intended to teach. All boys begin with a course of mensuration, followed by hydrostatics, and it is found, as a rule, that this occupies four terms. After this preliminary training a two years' cycle is followed, embracing magnetism, voltaic electricity, electro-magnetism, statics, heat, and optics. Dynamics and statical electricity are omitted from the course, partly because of the difficulty in obtaining satisfactory apparatus at a low price, partly because these subjects are considered to be of inferior educational value.

Mr. Cross, of Whitgift Grammar School, Croydon, urged that the science teaching should for the first two years be of a qualitative rather than of a quantitative nature. Boys, instead of being forced to spend hours over mensuration, which they find dull and uninteresting, should have lectures showing them "how things work"; the lectures should be varied, and embrace such subjects as dynamos, cranes, and steam-engines, as well as the more usual thermometers and lenses.

Mr. Wadmore, of Aldenham, urged the need for all junior forms to be made to take a course in practical elementary physics. It is necessary to discriminate between the needs of the few who take classics as a special subject and the vastly greater number who require a good general education; even the former will, however, feel the benefit of a little practical mathematics, and the time is probably not far distant when this will be a necessary subject for the Previous examination. The substitution of geometry for Euclid is no doubt a move in the right direction, but there seems a danger of mathematical and science masters travelling along different, and in some cases divergent, lines. It is necessary to have a concerted scheme and for mathematical masters to adapt themselves to take a share in practical instruction.

Cornelius Nepos. By W. H. S. Jones. viii+136 pp. (Blackie.) 8*d.* net.—This is an excellent text of a well-known school author. It contains all that survives of Nepos, viz., the twenty-five lives of great leaders, mostly Greeks. This book is to be commended for its cheapness and accuracy. The task of marking the quantities in so long a book is enormous and has been extremely well done.

THE TEACHING OF HISTORY.[1]

By H. J. SNAPE, M.A.
King Edward VII. School, Sheffield.

PROF. HUNT has written, "Nothing in the world is intelligible apart from its history, and man must be of all things the least so, because he is of all things the most complex, variable, and richly endowed." These words admirably summarise the importance of the study of history, and, indeed, no subject in the school curriculum touches stronger or more deeply-rooted interests. It is, then, essential to make a careful examination of the problem of method.

In a course of study extending over the period of a child's school life a constant adjustment of teaching to the child's growing knowledge and capacity must be made. Consequently a threefold course is necessary, adapted to three stages of mental development. In each section the whole ground as regards matter must be covered, but the matter must be treated in a wholly different spirit and method.

The first stage must be mainly biographical. It should consist of a series of "picturesque biographies." Success in this work must largely depend on the teacher's powers to tell a story graphically. The teacher needs to be imbued with something of the spirit of the late Dr. Arnold, of Rugby, whose interest in the events of history was so great that he quite took them to heart and made a personal matter of them. This intensity of feeling which he brought into his history lessons made them unforgettable. The teacher must be on his guard against biographical teaching becoming disjointed and leaving in the minds of his pupils a mere jumble of isolated stories. A text-book at this stage hardly seems necessary.

In the intermediate stage history proper can be taught, but the element of story should still be strongly marked, and every advantage should be taken of the hero-worship which is so signal a feature of children at this period of their lives. In this stage the external and picturesque aspect of history and the personality of great men should be chiefly dwelt upon. The text-book should be as simple as possible, and written in a brief and lively style, but the teacher will have to supplement it largely.

Here some concrete idea of how a history book comes to be written, what material the historian uses, and what kind of evidence he has for his statements, should be given. Pupils frequently think the brief paragraph or two about some great affair is a final and complete statement, and it is of importance to force upon their minds that the historical facts in their text-books are selected from an incomparably larger mass of facts. In this work the use of source books is of great value. In every form library there should be a sufficient number of source books for each member of the class to have one. It is quite ineffective for a teacher to read extracts; the books must be put into the children's hands, and problems must be set requiring from the children independent and original thought. To teach history really vividly and effectively, it is essential to get as close as possible to the earliest impressions made by the events being taught, and for this purpose source books are invaluable.

In the advanced stages the teacher's object should be to encourage reflection among the pupils by leading them to

[1] From a paper read at the North of England Education Conference, Sheffield, January 3rd, 1908.

study the causation of events and the inner life of institutions. They should be trained to look for the important points, to weigh evidence, to make judgments, and to apply them to analogous circumstances. In this stage the comparative method can be used with greatest advantage.

A well-equipped teacher is the fundamental condition of good teaching. He requires, first, sufficient knowledge, and that knowledge should be sure and intelligent rather than voluminous and encyclopædic; secondly, some practice in using historical evidence; thirdly, fair-mindedness and a wholesome spirit when presenting facts; and, fourthly, skill in narrative and in developing the pupil's knowledge by questions, and also practical ability in directing the work of the class.

The work of each course for the whole term should be marked out in advance. Only in this way can all the objects aimed at be gained. In the midst of the term, weariness and the inclination to drift appear, and some part of the work is in danger of neglect.

The first condition for a good lesson, and, above all, a good history lesson, is proper preparation, and preparation is of two kinds; it must be devoted to the subject as a whole and to the lesson in particular. After hearing the revision, the teacher will proceed to give his lesson. With the upper forms the lesson should closely approximate to "the lecture," and boys should begin to practise the valuable art of taking notes. It is a mistake always to adopt the same procedure. A lesson may sometimes take the form of a reading from two first-class historians on some particular point for the pupils to summarise in their notes, or of an investigation into some difficult point. A skilful teacher will find no lack of courses to avoid monotony.

The teacher's commentary or lecture should be realistic, enthusiastic, convincing, and extemporary; it should call events vividly before the pupils' eye, but it should be conversational in character in the preparatory and intermediate stages. Questions must be asked to keep up the attention of the pupils, so as to make them feel that they may be called upon at any moment to give proofs of attention. Of course, this has the disadvantage of breaking the continuity of the lecture, but nothing makes a class so apathetic as untiring verbosity on the part of the teacher. Above all, simple and clear language should be striven for, every name mentioned should be written on the blackboard, and the good rule, *tarde fiat narratio, ut sequi possint discipuli*, should be borne in mind.

In the teaching of history there must be a stern respect for truth. The alpha and omega of historical teaching is that the facts should be explained, not only because they have happened, but also as they have happened. The teacher should emphasise with readiness and preference the fine, the great, and the capable elements of our national history, but he must not venture to be silent upon stories of oppression.

It is very advisable for each pupil to possess an historical atlas, but if this is impossible, maps and plans of sufficient size must be prepared out of school. The use of an ordinary geographical atlas cannot be too strongly condemned. The pupil who carries into the study of mediæval France his notion of modern France will be confused at every turn. To expect him to understand the gradual evolution of France into a unitary State by means of a map of modern France is to expect the impossible. Maps should be used which are based on the knowledge the people of the period possessed of the places they were seeking to reach. The early history of America can be much better understood if the class examine maps which embody the explorers' ideas of the size and shape of the lands that lay behind the frontier settlements.

The question of historical geography naturally rises here. The comprehension of history becomes far easier when the geographical factors are clearly brought to bear. The effect of the Severn and Cheshire gaps in paralysing the resistance of the Britons to the Anglo-Saxons, when once these gaps had fallen into the latter's hands, appeals to a child and makes him realise the inter-relation of the two subjects. The predominant importance of the south and south-east of England in mediæval times becomes at once apparent to a class when they realise that agricultural wealth alone counted in those days, and that the trade of Western Europe was concentrated in the Low Countries, towards which the great artery of the Thames yawned.

Correlation of geography with history is not sufficient, and it is a sound plan to make the period of history to be studied the centre round which the literature and foreign language work should be grouped.

Collateral reading should be encouraged. It not only supplements the text-book, giving the student additional information and describing the same events from different points of view, but it also cultivates an interest in history as literature.

Questioning is a high art which requires a great deal of experience. The Prussian syllabus lays special stress on the necessity of practising a pupil as often as possible in the power of repeating what he has learnt in his own words and in connected narrative. Other forms of questioning are necessary, such as a fire of rapid questions and the usual method which seeks to develop the pupil's own thinking by approaching his mind on this side and on that.

World history, and especially ancient world history, seems to be neglected sadly in many English schools. There is a danger of historical teaching in this country becoming too insular. A plea may also be put in here for a wider treatment of Greater Britain when teaching English history. The study of civics must not be disregarded, but should not be separated from the history lesson. "We must never separate 'to-day' and 'formerly'; and civic instruction will not be fruitful unless it is ever stimulating a comparison between contemporary institutions and ancient institutions," wrote Compayré.

All forms of subordinate stimuli to historical teaching, such as historical pictures, historical novels, representations of dress, coins, models, plans, visits to museums or to libraries and archives, are valuable, but they require to be used carefully and sparingly, and never without some definite aim in view. The study of local history and the concentration of general history upon the home may prove stimulating, and deserves consideration.

Above all things, too much should not be attempted. One of the most difficult things is to decide how much to teach and how much to leave out, but it is imperative that the teacher should see that his pupils get to know and to remember undoubted facts that matter, the memorable and significant things. He can do this most effectively by cultivating his pupils' powers of selection, making them read with attention, and training them in the power of noting and concisely recording sets of facts bearing on the solution of a particular problem, or illustration of a particular idea. If this is accomplished, his pupils will have gained great material profit in the actual acquisition of information, and great disciplinary profit, for they will have gained the valuable judicial capacity of selecting what is essential.

HISTORY AND CURRENT EVENTS.

OPINIONS still differ as to the results of the last Hague Conference, both immediate and future. Sir Edward Fry in his recently published report is optimistic. Meanwhile, we note that Spanish America is making more progress towards stability in international relations than Europe. Some months ago we commented on the perpetual arbitration treaty between Chili and Argentina, and now we have news of what we are tempted to call the inauguration of the United States of Central America. The Republics of Guatemala, Honduras, San Salvador, Nicaragua, and Costa Rica have agreed to submit to a newly erected High Court all questions in dispute, not only among themselves, but with other Powers. Its jurisdiction is compared with that of the United States Supreme Court, and we are thus reminded of an old plea of the Peace Societies that all States should submit to such a court, as private individuals submit to the courts of their own country.

"THE establishment of popular control . . . is an extension and not a curtailment of the liberties of the people." So says the "Trade Union and Labour Officials' Temperance Fellowship" in reply to the "National Freedom Defence League" *à propos* of proposed teetotal legislation. How fond we are of the word "liberty" and of what looks like its plural, "liberties"! As the late Prof. Seeley said, it comes to mean whatever in politics we want. The late Lord Acton would have joined with his predecessor in this at least, that "popular control" and "popular liberty" are not by any means things of the same kind. Power to control others is one thing. Freedom from the control of others is another. But in popular speech, or rather, in speech addressed to the populace, "liberty" is used for both. Is this use of the word always quite honest? Is it not rather deliberately intended to confuse the issue?

THE French Republic has lately been anxious about its navy; and this for a reason which is quite new in European history. Until the last generation, France had potentially two enemies, the leading power in Germany, whether Prussia or Austria (sometimes, as in Napoleon's time, both together), and Great Britain. Against the latter a navy was necessary, and was not always forthcoming. This failure to maintain a navy was the result of her devotion to the army, which was necessary to fight her German foes, and the cause of her failure to maintain the struggle in America and India. But she never needed a navy against Germany, and never thought of attacking the Baltic coasts of Prussia. It was against a possible *Russian* attack by sea that Frederick the Great wanted, in vain, the help of the British fleet. But now that there is an *entente cordiale* between France and Great-Britain-and-Ireland, France still wants a fleet, because Germany now has one.

KING GUSTAV OF SWEDEN does not intend to be crowned. He is said to consider coronation "an unnecessary ceremony, and not in accordance with the spirit of the age." We must leave Gustav to settle the practical matter with his Swedish subjects and with the society of "crowned" heads of which he expects to be regarded as a member. But what would the folk of olden times have said? There was a time when an uncrowned king was regarded as no king, even if that assumption involved the consequence that there was no law, no order in the realm. Edward I. was the first English king who ever delayed his coronation for more than the necessary interval. Gustav's decision is parallel to the institution of civil marriage. The State has no ceremonial of coronation apart from the ecclesiastical. And Gustav will not go to church to be crowned. Are his thoughts high State or low Church?

ITEMS OF INTEREST.

GENERAL.

THE Board of Education directs the attention of governing bodies and persons responsible for the management of secondary schools to the provisions of chapter viii. of the current Regulations for Secondary Schools, which deal with the proposed establishment of a list of those schools which are recognised by the Board as efficient. Schools recognised for the Board's grant will, as stated in the Regulations, be placed automatically upon this list, but this will not be done in the case of schools recognised by the Board only for the purposes of sections 3 and 4 of the Teachers' Registration Regulations. The first list of recognised schools will probably be issued in the course of the summer, and the authorities of any school who seek inclusion in the list, and have not yet made the necessary application to the Board, are requested to do so with as little delay as possible. The Board cannot guarantee that all applications will be dealt with in time to admit of the inclusion of the school in the first list, but it is desirable that applications should be made by an early date, in order that the necessary arrangements for inspection may be made with reasonable notice to the schools, and with due regard to the other engagements of the Board's inspectors.

NUMEROUS resolutions were adopted by the Headmasters' Association at its annual meeting. Among these may be mentioned the following: i. That this association welcomes the new regulations for secondary schools, so far as they remove restrictions and limitations which have been found detrimental to educational progress under the previous regulations, but deprecates the employment of financial pressure as a substitute for legislation. ii. That care should be taken to prevent the use of such regulations as a means to transform the constitution and character of secondary schools already established under schemes. iii. That in schools established under scheme, the composition and rights of governing bodies should be carefully safeguarded in respect of regulations issued from time to time by the Board of Education, and of action taken by local education authorities. iv. That it is inexpedient to lay down a fixed general rule as to the proportion of free places that should be reserved for pupils from elementary schools; and that free places in public secondary schools, hitherto reserved to pupils from public elementary schools, should be open to all duly qualified candidates, irrespective of their place of previous education. v. That in estimating the percentage of free places granted to boys attending elementary schools, only the number of day-boys admitted should be taken into account, and that schools largely or wholly dependent upon boarders should not be placed on the same footing as schools of a more purely local character. vi. That, having regard to the case of "Wright *v.* Zetland," this association approves of the action of the council in the appointment of a committee to consider with a similar committee of the Incorporated Association of Assistant-masters the best means of giving to assistant-masters a more secure tenure of office. vii. That, in the opinion of the association, the possession of a degree of some recognised university, or, in the case of women only, the equivalent, or in the case of teachers

of modern languages, music and art, some similar diploma, should be made a condition of admission to the register of teachers, provided always that the Registration Council shall, within six months after its first meeting, have power at its discretion to admit to the register persons who are not qualified for registration under the conditions above named. viii. That, in the opinion of this association, the recent tendency of the Board of Education to urge the employment of a greatly increased proportion of specialist teachers throughout the school is not beneficial to the best interests of scholars in secondary schools. ix. That, in the opinion of this association, local education authorities should be urged to adopt the bursary system in the training of elementary teachers, in preference to the pupil-teacher system, and to insist upon a year's work as student teachers before entrance into the training college.

At the annual meeting of the Assistant-masters' Association the following resolutions were adopted: i. That in view of the position created by the judgment in the Richmond School case, whereby secondary-school teachers are liable to instant dismissal, without appeal and without redress, the Board of Education should be called upon to promote legislation for the purpose of securing to teachers (*a*) reasonable notice in case of dismissal, or salary in lieu of notice, and (*b*) an appeal to some public authority before whom the dismissed teacher should have the right of urging his case in person or by his representative. ii. That the Territorial Army Bill having become law, it is the duty of every secondary school to contribute to the supply of officers, and to this end assistant-masters in such schools are called upon to work in every way possible, but this work should be considered as quite voluntary, and should not be imposed on assistant-masters generally as one of the necessary duties of the profession. iii. (*a*) That in order to command the confidence of assistant-masters, it is essential that the inspectors and examiners appointed should have had considerable and successful experience as schoolmasters. (*b*) That the inspections should be so arranged as to allow an opportunity for quiet personal conversation between the inspector and the assistant-master—not in the presence of the class, but when criticism can be candid, confidential, and sympathetic. (*c*) That the suggestions of the inspector can be more freely offered and more freely considered if they are put forward, in the first instance, as recommendations only. (*d*) That, when possible, it would be convenient for the master to know at the beginning of the lesson whether the inspector wishes to be merely a spectator or to intervene in the conduct of the lesson. (*e*) That the inspector's formal report on the work of the staff should be placed in the hands of each master.—The report of the executive committee, which was adopted, states that the past year has been a period of activity and growth in various directions. But chiefly it has been remarkable for the decisions of the Court of King's Bench and the Court of Appeal in the Richmond School case. These judgments mark a definite stage in the history of tenure. By them it is definitely settled that an assistant-master in most of the schools under the Endowed Schools Act is not the servant of the governors, and that he is dismissible "at pleasure"; this expression to be taken in its widest sense, without qualification, which means that the master may be dismissed at a moment's notice without cause assigned. Mr. A. A. Somerville, in moving the adoption of the report, said that, for the first time, the membership of the association exceeds 2,000, but added, the association must not rest until it includes every assistant-master in every secondary school.

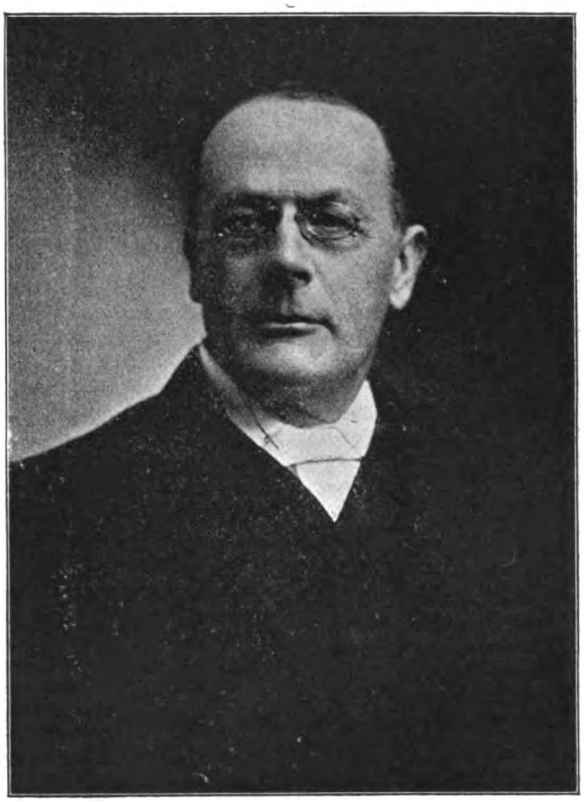
The following resolutions were adopted at the annual meeting of the Association of Assistant-mistresses: i. This meeting is of opinion that there is a need for secondary schools for girls of different types, with different curricula or combinations of curricula; *e.g.*, one type in which the curriculum is planned for a majority of girls leaving at the age of eighteen or nineteen, and then, it may be, continuing their education at places of university rank; secondly, another type in which the majority of girls leave at the age of sixteen; thirdly, a type in which there is a post-school course, chiefly for training either in domestic science or in art. In many cases all three types, or at any rate the first and second, might be advantageously combined in the same school. ii. That up to the age of twelve, *i.e.*, practically in the lower school, the general course of education should be the same in all types of secondary schools. iii. That the fewer the subjects taught in the lower school, the better for the mental development of the child. The curriculum in this part of the school should consist mainly of English, 4½ hours, exclusive of geography and history, being the *minimum*. Only one language, other than English, should be taught. Practical geometry should be the only mathematical subject in addition to arithmetic, and it should not be introduced until the last year of the lower school course. iv. In the middle school the curriculum should include in some part or other: (*a*) a survey of general history that will be a foundation for the more detailed work of the upper school in English and European history; (*b*) a course of elementary practical science. The curriculum of the upper school should be very elastic, certain subjects being alternative in order to avoid over-pressure, and to allow of specialisation. For this reason, the association welcomes the new regulations for secondary schools, in so far as they allow of greater elasticity. v. (*a*) That this association feels strongly that it should have a representative on the new Registration Council. (*b*) That at least one-fifth of the Registration Council should be women. (*c*) That the Registration Council should be composed of representatives of secondary, elementary, and technical education, and of the universities, together with some Crown nominees. (*d*) That while this association desires that high academic qualifications should ultimately be required for admission to the register, it thinks that temporary regulations should be made as in the case of the present register.

An address on the order in which scientific ideas should be presented to students in (*a*) schools, (*b*) universities, was delivered by Prof. H. A. Miers, F.R.S., at a meeting of the Association of Public School Science Masters on January 14th. Prof. Miers expressed the conviction, with which many teachers will find themselves in agreement, that scientific teaching lacks system in the matter of order, and is placed somewhat at a disadvantage with subjects in which there is a recognised order based upon prolonged experience. The question is not so much one of suitable science subjects for pupils or students of different ages, as of the succession of ideas which will be most intelligible and productive at the various stages of mental development. The historical order is often the most natural, if not necessarily the most logical, and it forms a useful method of approach and treatment. A committee of the British Association has been appointed to consider the sequence of science subjects in schools, and Prof. Miers's address is a valuable contribution to the subject of this inquiry. We hope to be able to find space for a large part of the address in our March number.

THE annual meeting of the Geographical Association was held on January 8th. The report for 1907 shows that the membership has reached 643, and that during the year new branches have been formed at Sheffield, Bristol, and North London. Among the activities of various committees of the association during the year may be mentioned the preparation of series of lantern-slides illustrating districts of Britain and non-British lands, especially those of central and western Europe. These slides may be hired by members of the association at greatly reduced rates. A lending library of geographical books for the use of members has been arranged. Lectures for teachers will be delivered during the present term at the Botanical Lecture Theatre, University College, Gower Street, London. On Friday, February 14th, at 8 p.m., Prof. R. A. Gregory will lecture on "Scientific Method in the Teaching of Geography," and on February 28th, at 8 p.m., Mr. T. Alford Smith on "Physical Geography as an Essential Part of School Geography." Particulars concerning membership of the association can be obtained from Mr. J. F. Unstead, 5, Wiverton Road, Sydenham, S.E.

THE report of the Board of Education for the year 1906–7, which has now been published, contains a number of interesting statistics. For instance, in connection with the work of the Teachers' Registration Council, the numbers are very instructive. The number of names of elementary-school teachers actually entered on the Register up to September 30th, 1907, was about 90,000; the number of teachers registered on Column B up to the same date was 11,654. During 1906, 1,429 applications for registration on Column B were received, and 1,168 teachers registered, the great majority of these having been registered in accordance with terms which expired on July 31st of that year. Up to the end of September, 1907, twenty men were registered under the regulation requiring training as a condition, and under the same regulation 260 women. The report states that the statistics seem to show that the necessity for a course of training before anyone is allowed to teach in a secondary school is supported by no conviction either among those intending to teach or those responsible for making appointments.

FEW men are better known in the scholastic world than the Rev. H. W. McKenzie, who entered at Christmas on the important duties of headmaster of Uppingham School. Mr. McKenzie's school experience has been of the widest and most varied kind. Both as assistant-master and as headmaster in schools of very different types, he has left the impress of his tact, ability, and earnestness. Mr. McKenzie's longest term of office as an assistant-master was at Wellington College, where he was also responsible as Bursar for the whole of the financial and domestic arrangements. During Mr. McKenzie's term of office the chapel was enlarged, new dormitories were built, the whole of the drainage system was renewed, and the sanatorium, the swimming bath, and the gymnasium were all reconstructed or improved. When headmaster of Lancing, Mr. McKenzie, with the help of old boys and friends, and also through his own generosity, succeeded in having a new cricket ground dug out of the side of the hill. It is not, however, by such achievements that Mr. McKenzie is best known among schoolmasters. He is also a successful teacher. During his stay at Lancing the modern side of the school was reorganised, and the work improved. While he was headmaster of Durham the sixth form was very successful in gaining scholarships. But it is for his influence on the characters of his pupils that Mr. McKenzie will be no unworthy successor to the great second founder of Uppingham School—Edward Thring. The music for which Uppingham is famous will not want encouragement under Mr. McKenzie's rule. He is also an enthusiastic sportsman. When an assistant-master at Loretto he played cricket for Scotland, and he was well known in the south of England as a wicket-keeper and bat. His skill at football was no less conspicuous, and he has continued to play both games almost to the present day. It is an interesting fact that the new headmaster should come to Uppingham from Durham. Fifty-three years ago the headmaster of Uppingham, Dr. Holden, obtained what was then the far superior position of headmaster of Durham. One of his unsuccessful competitors, Mr. Edward Thring, was chosen to succeed him at Uppingham. The record of what he did there forms a most important chapter in the history of education. A minor result of his work was that the relative importance of Uppingham and Durham has changed, and Uppingham now has to welcome from Durham a headmaster not unworthy to carry on the work of the great man who has made the name of Uppingham famous.



[Photo. W. J. W. Stocks.
The Rev. H. W. McKenzie.

THE problem of the supply of teachers for elementary schools is discussed in the latest report of the Board of Education. It appears that in order to supply adequate staffs for elementary schools in England in 1909, no fewer than 13,500 fresh adult teachers should be available to begin service in that year. To provide these, at least 21,000 boys and girls should have been brought into the early stages of the profession in 1906. But the total number of pupil teachers who began their course in 1906–7 was only 10,900, or about half of what was re-

quired. The numbers coming into the profession from other sources than these furnish only an insignificant contribution to the total supply. The report states that unless new sources of supply are opened up, the country must make up its mind to be handicapped badly in its efforts to improve its elementary education owing to the serious shortage of teachers. Though the report seems to have avoided the inference, the conclusion seems to be that the profession of teaching must be made more attractive by increasing the emoluments of teachers. Parents have yet to learn that what is so much worth having—as is a good education—is equally worth paying for. Intimately connected with the question of the supply of teachers is that of the provision of training colleges. Though the number of fresh adult teachers required annually is about 13,500, the training colleges appear to provide accommodation for about one-third of this number only. Much as tax- and ratepayers appear to dislike the prospect, it is clear, if this country is to hold its own in the industrial competition among the nations, that there must be a still larger expenditure on our national education.

WE have received from Leamington (A. Tomes, 1s.) a useful pamphlet—"Course of Reading for Girls," by Miss Alice Reeve. It is divided into sections according to the ages of the girls, and each section is again classified according to subjects—fiction, history, science, &c. These lists have apparently stood the test of experience, and will no doubt be found useful by others besides the compiler. It is inevitable that a certain personal bias should be shown by any such compilation. We note, for instance, among the novels recommended to girls from sixteen to eighteen years of age no fewer than five by H. S. Merriman, and the theology recommended to girls from fourteen to sixteen years of age consists of merely three books by Bishop Gore. But these are minor blemishes in a selection that shows, on the whole, a wide range of sympathy and interest. The advantage of such lists for pupils is the insistence upon attention to classics, old and new, which are apt to be overwhelmed under the flood of printed matter of all kinds (books, newspapers, magazines) that confronts the bewildered reader. Harassed parents and guardians by reference to such lists may also be saved from the purchase of printed rubbish for birthday or other presents. Any girl who has read even half the books in Miss Alice Reeve's lists can hardly fail to have acquired a taste for the best, and that is, after all, the utmost that external guidance can hope to achieve.

THE second annual meeting of the Historical Association was held on January 9th and 10th at University College. On the first day Dr. Thomas Hodgkin delivered an address on "The Teaching of History." On January 10th Principal W. M. Childs, of University College, Reading, read a paper on "The Teaching of Local History." The paper was followed by an interesting discussion, in which Dr. J. E. Morris, Prof. Hearnshaw, Prof. Pollard, Miss Spalding, Mr. Baker, and Mr. Vickers took part. Dr. Hodgkin was then elected a vice-president, and Prof. Leonard, of University College, Bristol, a member of the council. The reports of the president and treasurer were read, and the president was able to remark on the satisfactory condition of the association, the membership of which numbers almost 700.

THE arrangements for the third International Congress for the Development of Drawing and Art Teaching, which is to be held in London from August 3rd to 8th next, are being rapidly pushed forward. The Prince of Wales has consented to become the patron of the congress, while the Princess of Wales, the Princess Royal, the Duchess of Fife, Princess Christian, Princess Louise, the Duchess of Argyll, Princess Henry of Battenberg, and the Duke of Teck have accepted the position of vice-presidents of the British section. Among the vice-presidents are the Ambassadors for France, Germany, Russia, Austria-Hungary, the United States, and Italy. Foreign secretaries have been appointed for Austria, Belgium, Bulgaria, France, Germany, Holland, Italy, Luxembourg, Switzerland, and the United States, in which countries exhibits for the congress are being organised. The branch of the congress dealing with the application of art to industries will be very representative and has already aroused the interest of many large manufacturers. The Lord Mayor of London has become one of the vice-presidents, and has consented to preside at a meeting at the Mansion House on February 12th, when several authorities will speak on the aims and objects of the congress and the importance of its work. It is hoped that the congress will not only give an impetus to the teaching of drawing in all schools, but will form the basis of a better co-ordination of art instruction from the primary schools to the schools of art or craft schools.

THE annual Christmas lectures at the Royal Institution, "adapted to a juvenile auditory," were given by Sir David Gill, who chose as his subject "Astronomy Old and New." The lecturer explained the proofs of the earth's rotundity and rotation, and described the solar system. One lecture was devoted to spectrum analysis, and another to the description of a modern observatory and the work of a modern astronomer. Throughout the course abundant lantern-slides and experiments were shown, and the younger part of the audience evidently appreciated this feature. By the courtesy of the Royal Society, the audience had the privilege of seeing the original telescope made by Newton, and presented by him to the society. Much interest was awakened by the photographs showing how the task of installing the large telescope of the Cape Observatory was accomplished. The audience hardly deserved the title of juvenile; the majority were decidedly grown-up; there was a fair sprinkling of children too young to understand much of the lectures, although Sir David Gill was at pains to put the subject simply. We cannot help thinking that the Royal Institution could give keen boys and girls of from fourteen to seventeen years of age valuable encouragement in their pursuit of science by consulting teachers with regard to terms of admission. The lecturer made skilful use of the splendid resources of the Royal Institution, but we had to close our eyes to conjure up a vision of the theatre filled with a genuine juvenile auditory.

SCOTTISH.

THE death of Lord Kelvin has removed from university life in Scotland its greatest and most attractive figure. Of course he played his part on a much wider stage, but here was the one he lived in most and loved best. For well over seventy years he lived in a university atmosphere, as boy playing about the college quadrangles, as student, as professor, and finally as Chancellor. Eleven years ago, at the jubilee of his occupancy of the chair of natural philosophy in the University of Glasgow, countless tributes to the supreme greatness of his achievements in pure science, and to the incalculable value of his services in the field of applied science, were paid to Lord Kelvin by the representatives of every learned society and every civilised nation in the world. All his greatness and all his honours

he bore lightly as a flower. The transparent simplicity of his nature, joined with his almost superhuman attainments, made him an irresistibly attractive personality to his students. He was not a great teacher in the commonly accepted sense of the word. He soared in the empyrean too much for that. But no matter how abstruse and incomprehensible the subject, he held the student, like the ancient mariner, with his glittering eye, and always had his will. The writer of these notes will never forget the boyish abandon he showed on one occasion while experimenting with a new form of seismometer. The vertical forces exerted were not sufficient, and the great professor began dancing on the floor like a schoolboy in order to get the amount required.

"Death, ere thou hast slain another
Good and great and learned as he,
Time will throw a dart at thee."

THE annual Congress of the Educational Institute of Scotland was held this year in the Academy, Dumfries. Mr. John McWhan, Cambuslang, presided over a thoroughly representative meeting. The president in his opening address emphasised the need for reducing the number of pupils in elementary classes to those in actual operation in secondary schools. If thirty was the maximum for efficient work in the latter, sixty must clearly be far beyond the maximum in the former. Mr. L. M. Fyfe, Rector, Queen's Park School, in the course of a thoughtful and interesting address passed under review the new regulations for the training of teachers. While generally approving of these, he considers that they will have to be scrutinised very carefully in operation. A proper balance must be kept between the cultural and the professional side of the work. In this connection he regrets the seeming tendency of the Department to discourage, or at least not to encourage, the graduation of teachers. Probably Scotland can show a larger number of graduates within the ranks of its elementary-school teachers than any other country in the world. The admitted excellence of the work in its public schools must be largely the result of this traditional policy. To depart from it now would mean a retrogression so grave and momentous that it is to be hoped the Scottish members of Parliament will intervene.

THE *pièce de résistance* at the congress was Prof. Reid's address on "Schools, Past and Present." The worth and merits of the old parish schools were never painted with greater charm and brilliance. To full knowledge of his subject Prof. Reid joined the most perfect sympathy. He put in a strong plea for the individualism that marked the work in the old parish schools, for their argus-eyed searching for "lads o' pairts," and for their parental care over them when found. He criticised the action of the Department in removing from the ordinary public school all opportunity for higher work. The levelling down of the work there produced teachers who were without interest and without hope. The proposed registration scheme of the Department would place an impassable gulf between the two classes of teachers, and would make the elementary-school teachers the helots of the educational hierarchy. An animated discussion followed, in which the professor came in for some severe knocks for his alleged heretical opinions on present-day tendencies.

MR. J. F. TOCHER, who has been engaged for some years on an investigation of the colour characters of the school children of Scotland, submitted to the congress an official account of the survey with a brief statement of results. The work has been organised by the Royal Society, which has contributed £400 towards the expense, and aid has also been received from other sources. Mr. Tocher acknowledged the hearty response that has been made to his appeal for information to the teachers of Scotland. Particulars have been furnished of more than half a million children. The survey clearly proves that several types have gone to the making of the Scottish people. The Teutonic type is fairly represented throughout almost the whole country, but especially in the north and the borders. While this is so it cannot be said that there is a very marked predominance of any one type. The fair, the dark, and the medium occur in nearly equal proportions. An interesting question is raised by the small representation of red-haired people that the survey shows—a little more than 5 per cent. The question arises whether red hair is a racial characteristic at all. While many authorities hold the view that it is not, the fact must not be overlooked that Tacitus in his "Annals" speaks of the red-haired Caledonians. It is possible, therefore, that these red-haired people are the direct descendants of the Picts—the painted, red-haired Caledonians of Tacitus.

AN exhibition of school drawing, in connection with the approaching International Congress on Drawing, was opened during the Christmas recess in the Royal Scottish Academy, Edinburgh, by Mr. Sinclair, Secretary for Scotland. Mr. Sinclair said that in no department of Scottish education is progress more marked and more indisputable than in drawing. A study of the exhibits amply confirms this judgment. At every stage there is evidence of an individualism that was quite impossible under the old conditions. Personal taste, initiation, and originality are allowed full scope by the new syllabus, and the results as presented in the exhibition are highly creditable both to pupils and teachers.

THE Scotch Education Department has issued a circular stating that it is asked from time to time to select candidates for educational appointments in India and the colonies. Teachers are reminded that for this purpose a list of applicants is kept in the office, and those who are desirous of obtaining employment abroad should make a general application to the Department without waiting to hear of a particular vacancy, in order that their names may be placed on the list. Applications should be addressed to the Secretary, Scotch Education Department, Dover House, Whitehall, S.W. Testimonials and certificates should not be forwarded until the candidate has received a special form of application, which will be sent at his request.

IRISH.

MR. BIRRELL'S ill-advised criticism of the intermediate system has called down vials of wrath upon his devoted head. It is not merely that he declared it to be nothing but cram, but that he said he had consulted judges, experts, and teachers before arriving at this conclusion. Everyone has accordingly been anxious to find out who these individuals are, and by a process of elimination they appear to be nobodies. First, Archbishop Walsh, who as a member of the Intermediate Board may claim to represent the Roman Catholic side of intermediate education, protested at a prize-giving in the name of the students who had passed the examinations, and more particularly of those who had passed with honours, against the discredit thrown upon their work by the Chief Secretary's accusation. He further pointed out that for the one chief blot upon the system, viz., the absence of inspection, Mr. Birrell himself, and he alone, is now responsible, as he refuses to wipe it out, and that in face of the Act of

Parliament of 1900, which was expressly passed to make inspection possible. Then, again, Dr. Mahaffy protested in the Press that he had not been consulted, so that Trinity College could not have been referred to by Mr. Birrell. Dr. Mahaffy added that the Board has the funds for inspection, and that Mr. Birrell alone blocks the way; but few teachers will agree with Dr. Mahaffy that intermediate education is sufficiently well endowed, and, in fact, it is well known that the salaries of teachers are utterly inadequate. Finally, the Joint Consultative Committee of the associations of Heads of Secondary Schools has publicly asserted that neither it nor the associations themselves were ever favoured by Mr. Birrell with any inquiries on the subject. It seems that Mr. Birrell's remark was a particularly disingenuous way of stating that he had no immediate intention of assisting intermediate education.

THE university scheme as outlined by the Provost of Trinity College at Manchester last December with the sanction, it is commonly believed, of Mr. Birrell, has been generally received in silence. The prevalent feeling is that it is well to wait for the official details of the plan before giving either approval or disapproval. It is not greeted with particular favour in Trinity College, but the Defence Committee prefers to defer making any statement about it. Some irresponsible criticism by members of Trinity states that the college is bound to be injured by the scheme, but the most interesting information to be gleaned from the discussion is that the authorities are working hard to put into practical shape the suggestions for the improvement of Trinity College made by the recent Royal Commission, and there is no doubt that such reforms carried through by the college itself will be of great benefit to its teaching and its position as a university adequate for modern needs.

THE Dublin University Commencements held in Trinity College just before Christmas were remarkable as being the last opportunity for lady graduates not educated at Trinity College to obtain there *ad eundem* degrees. A very large number of ladies presented themselves from Oxford and Cambridge. From this time forth, ladies desiring a university education in Oxford, Cambridge, or Dublin, must choose between the English universities which offer no degrees and the Irish university where they can obtain them, until it shall seem good to the authorities in England to throw open their degrees to women.

SCHOOL hygiene is now attracting considerable attention in Ireland. Lady Aberdeen's crusade against tuberculosis is directed to the public generally, but the special attention of teachers is being directed to the help they can afford in impressing upon children the means of prevention. In addition to this, a special course of lectures is being delivered this term at Alexandra College, Dublin, by Dr. Ella Webb, in connection with the department there for the training of secondary-school teachers, an inaugural address being delivered on January 15th by Dr. W. H. Thompson, King's professor of institutes of medicine in Trinity College, entitled "The Science of Health."

THE Department of Agriculture and Technical Instruction announces that a limited number of scholarships and of teacherships-in-training, tenable at the Royal College of Science, Dublin, will be offered this year for competition among students of science and technology. The scholarships are of the value of £50 per annum, besides free instruction, and the teachers-in-training receive free instruction and 21*s.* per week. Both last for three years. The competition is limited to mathematics, experimental science, and drawing, but all candidates must pass a qualifying examination in English and one other language. The examination will be held on July 1st–3rd, and all applications for admission must be made before April 30th. Full particulars can be obtained from the secretary of the Department.

WELSH.

A VIGOROUS protest has been made by the North Wales teachers against the "policy" of the Carnarvonshire Education Authority. They complain that in the Carnarvonshire council schools in one out of every six schools the staffing is worse now than in 1903, when they were taken over by the new authority. It appears that in 1903 there were 720 teachers in the county, of whom 258 were certificated, giving a percentage of 35·8; while in 1907 there were 802 teachers, of whom 282 were certificated, or a percentage of 35·1. This means that in 1903, for every 68·8 scholars there was one certificated teacher, whereas in 1907 there was only one certificated teacher for every 73·4 scholars. In other words, certificated teachers are being replaced by teachers with inferior qualifications.

THE president of the National Union of Teachers recently pointed out that Carnarvonshire had more than 300 classes taught by teachers who were but partially qualified or who had no qualifications at all. "What would be said in Germany and certain other Continental countries to a system that permits such a state of things? It is said that the poverty of the education authority, not its will, compels it to adopt such a makeshift in education. But it is economically wasteful and educationally unsatisfactory. Compare this with the state of things in the secondary schools, which draw four out of every five of their pupils from the elementary schools, which cannot be said of England. In the secondary schools in Wales there is a certificated teacher for every nineteen children, and Carnarvonshire has one for every sixteen. There will be no real education in the elementary schools unless each individual child can claim attention."

IT is well known that there is a settlement of Welsh colonists in Patagonia, in the Southern Province of Argentina. This was founded in 1865. The colony, though technically under the Argentine Republic, is virtually free. The current language is Welsh, and the municipal proceedings are carried on in Welsh, though minutes of the meetings are translated into Spanish. It is interesting to note that sixteen out of the seventeen schools in the district are staffed by teachers who carry on their teaching in oral Welsh.

THERE is naturally keen criticism of Mr. McKenna's basis of grants from the Treasury, in proportion to the population of Wales, rather than in proportion to Welsh eagerness for education, or to the contributions per head of the Welsh people. Principal Griffiths, of the University College of South Wales, has prepared some interesting statistics, which he has announced to the Cardiff Education Committee. He has shown that the contributions from the rates in aid of secondary and higher education throughout the whole of Wales amounts to 0·56 of the percentage of gross rental, whilst in England the percentage is 0·08. The contribution from the rates in Wales in percentage of the gross rental is thus seven times per head as much, for secondary and higher education, as in England. The amount per head expended on education in the year 1903–4 in England (excluding London) was 3*s.*, in Scotland 4*s.* 10½*d.*, in Wales 5*s.* 8½*d.*, so that, per

head, Wales is expending nearly twice as much as England.

A DEPUTATION representative of education authorities in Wales has waited upon Mr. McKenna, the President of the Board of Education, with reference to grants to secondary education in Wales. The criticism was directed against the new regulations, by which Wales receives its secondary grants in proportion to population of the Principality relatively to that of England. It was maintained that Wales was not put on the same footing as England, since the Principality receives no grants for children between ten and twelve years of age in the secondary schools, nor for those more than sixteen years of age, whereas in England such grants are given. It was contended that the fair and proper basis for the allocation of the grant would be to give Wales one-ninth of the total grant for England and Wales, since Wales has one-ninth of the whole of the children in the secondary schools. The new regulations give Wales one-eleventh of the total grant. Mr. McKenna's reply was that he did not in any way wish to weaken the financial position of Welsh secondary schools. His position was: If the Welsh schools accepted the same regulations as the English schools, they would have the same grants. When he went to the Treasury for money, it would be on the basis of the same regulations for Wales as for England. It was impossible for him to offer to Wales an equivalent grant for Wales in proportion to England, based upon the number of children in the secondary schools. What he could offer them was the same amount of money per child as was given in England, viz., a grant of £2 from ten to twelve years, £5 from twelve to sixteen years, and £5 from sixteen to eighteen years, under the same conditions as the grants in England. The deputation asked for time to consider the matter. A meeting was held afterwards, and it was decided to call a further meeting at Shrewsbury to decide whether further representations should be made to the Board of Education.

THE Vicar of Swansea (the Rev. the Hon. Talbot Rice) has deducted £9 12*s.* 9*d.*, local education rate, as a protest against the action of the local education authority. He charges the authority with depriving teachers in the voluntary schools of their proper salaries, with the sacrifice of efficiency of the staff, and the refusal of maintenance of the Oxford Street Schools, in spite of the definite orders of the Board of Education. This appears to mark the beginning of a passive resistance campaign on the part of Swansea Churchmen.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

F. Coppée, Poésies Choisies. Edited by L. Delbos. xxxvi+118 pp. (Clarendon Press.) 2*s.* 6*d.* net.—Mr. Delbos supplies a pleasant, gossipy account of Coppée's life and works, with welcome *résumés* of some of the more notable plays. The selection of poems is excellent. The notes might easily have been reduced to fifteen pages instead of twenty-eight, by the omission of a good deal of superfluous, though kindly, comment, and of notes on prosody, mainly referring to the treatment of the *e muet*. These notes are not always accurate. Thus *dans une chambre où* certainly does not make six syllables (note on p. 47 l. 19). On the whole, however, the editor has done his work very well, and we are grateful to him for giving us this introduction to Coppée, which will send many to the rest of his work. The book is carefully printed; we have only noticed *rhythme* and its derivatives with *rh* instead of *r* (several times), and misprints on p. 50 l. 31, and in the notes on p. 3 l. 27, p. 29 l. 17, p. 54 l. 67.

P. Mérimée, Carmen and other Stories. Edited by E. Manley. xvii+251 pp. (Ginn.) 3*s.*—This is an attractive edition of some of Mérimée's short masterpieces; it is well that he should be known by something else than the often edited "Colomba." Mr. Manley gives a brief biography and a note on Mérimée's "style and genius"; the text is carefully and neatly printed, and the vocabulary seems to be complete. The notes consist largely of English renderings, many of which are absurdly obvious. Why waste time by giving renderings like the following: ***un si beau***, so fair a; ***avait pu être***, might have been; ***assez bon***, pretty good; *le monde*, people; &c.?

Dictées Françaises. By M. S. Bruce. iv+46 pp. (Heath.) 1*s.*—This little book consists of four parts: a good collection of sixty-five anecdotes, from four to twenty lines in length; a number of short passages for practice in the agreement or non-agreement of past participles; eight pages of proverbs, with their English equivalents; and four pages of "pensées de divers auteurs."

V. Hugo, Selected Poems. Edited by H. W. Eve. xxii+180 pp. (Cambridge University Press.) 2*s.*—We are once more under a debt to this veteran editor. A selection from V. Hugo's poems was wanted, and no one was better fitted for the difficult task of forming such a selection and providing a suitable introduction and scholarly notes. It would be presumption to praise his work. If we may be allowed a comment, it is that in books for advanced pupils grammatical notes are not wanted; such a note as "*ait*: why subjunctive?" may well be regarded as superfluous. A note on V. Hugo's prosody would have been welcome. The book is printed with the scrupulous care to which the Pitt Press has accustomed us. We have noticed only *tout* instead of *tour* (p. 10 l. 159), *cclairs* for *éclairs* (p. 56 l. 32). It is a pity that there are no references in the notes to the paging of the text; the page numbers might be added in the margin.

Sainte-Beuve, Causeries du Lundi. Edited by A. W. Tressler. vii+152 pp. (Arnold.) 1*s.* 6*d.*—Mr. Tressler's preface shows that he has sound views as to the duties of one who edits an advanced text. He realises the importance of notes on the subject-matter, but leaves grammatical explanations to the teacher, and altogether omits cut-and-dried translations. He has selected from the great number of Sainte-Beuve's "Causeries" the "Préface de l'Auteur au premier tome de l'édition complète," and the essays on Lamartine's "Confidences," "Raphaël," and "Histoire de la Restauration," as well as the famous one entitled "Qu'est-ce qu'un classique?" The notes reach a high level of excellence, for Mr. Tressler is cultured; but his knowledge of languages sometimes brings him perilously near to being pedantic, and his grave warnings against "and which" are a little comical in this *milieu*. The exercises for retranslation are good; reform teachers would have been glad to see also some exercises for free composition, such as Mr. Longsdon supplied in a recent volume in the same series.

Erckmann-Chatrian, Le Docteur Mathéus. Adapted by W. P. Fuller. 77 pp. (Methuen.) 1*s.*—This is a further volume of Methuen's "Simplified French Texts." The story of good Dr. Mathéus, who goes forth to preach his

doctrine of the transmigration of souls, accompanied by the faithful Coucou Peter, contains some amusing incidents, but is, on the whole, hardly interesting enough. There are no notes; the vocabulary is almost complete. A curious slip is "ou *or* où" on p. 70; otherwise the book seems to be very carefully printed.

Classics.

Delecta Biblica. Compiled from the Vulgate of the Old Testament, and arranged for the use of beginners in Latin. By a Sister of Notre Dame. xiv+80 pp. (Longmans.) 1*s.*—Although this book contains no formal grammar, we gather that it is meant for real beginners, who are to be told the paradigms when they have begun to induce them from the text. The subject-matter being familiar, attention will now be concentrated on the language, which is new. Some notes are given, and hints as to method in the introduction. The idea is good, the principle sound, and there is no doubt that it is better to learn Latin in this way than by the usual way; but the execution is open to objections. (1) The Latin is unclassical, not only in vocabulary, which does not matter much, but in construction (*e.g.*, factus est homo *in animam* viventem). (2) Too many difficulties meet us at once: in the first extract, for example, three conjugations, four declensions, and a number of other novelties. The constructions might easily have been made classical; but the other objection is not to be met. The book, therefore, is not fitted for young beginners; but it may be a useful reader when they have learnt the elements of the grammar.

Decursus Primus. A First Latin Grammar with Exercises. By T. G. Tucker. vi+178 pp. (Macmillan.) 2*s.* 6*d.*—After examining this book we turned to the preface, and to our amazement found a "statement of principles" which is generally contradicted by the book itself. To take three of them: (1) The accidence to be first learned will depend on the vocabulary which must be first used—yet the book is so arranged that the accidence rules the vocabulary. Since Dr. Tucker begins with the first declension, his vocabulary at first consists of words of that declension. So with the rest. (2) A beginning should be made as soon as possible with the formation of sentences of a simple but rational type. (3) The exercises should be of as much human interest as possible. Examples from the third exercise are: "You praise the wings of flies," "The frog sings," "I am awaiting my daughter," "The goddesses are looking at their beauty." The form is simple, but the contents are unsuitable, and some are absurd. What is the human interest of a singing frog, or of a daughter, to a schoolboy? or of "the cow's anger" (ex. i) to anyone? What is the meaning of "With-a-fork at-Marseilles"? Most of the sentences are of this dull kind; there are a few exceptions, as the beginning of ex. xiv. We cordially agree with Dr. Tucker's principles; and if he will rewrite his book so as to suit them, we shall welcome it.

The Year's Work in Classical Studies, 1907. Edited by W. H. D. Rouse. 156 pp. (Murray.) 2*s.* 6*d.* net.—This is the second volume issued by the Council of the Classical Association, showing in a concise and useful form work accomplished in different branches of classical study during the year 1907. The council is to be congratulated on the contents of the volume, and also on its promptitude in issuing it early in the year. No one who wishes to keep abreast of classical studies can afford to do without this handbook, and we are appalled to think how much classical students and teachers must have missed for want of such a work previous to 1906. It contains nineteen sections by specialists of the highest rank, with an index. The sections are similar to those of the first volume, except that those on comparative philology and private antiquities do not appear, while two new sections are added—on Hellenistic Greek, by Dr. Moulton, and the New Testament, by Prof. Peake. These will be heartily welcomed by students of the New Testament in Greek, while the whole book is further testimony to the freshness and virility of classical studies in the twentieth century.

The Architecture of Greece and Rome. A Sketch of its Historic Development for the Use of Students and Others. By W. J. Anderson and R. P. Spiers. 356 pp.; 257 illustrations. (Batsford.) 18*s.* net.—We are glad to receive a new edition of this excellent history of architecture. The new edition has been entirely revised and brought up to date by the addition of about fifty pages of matter and eighty illustrations; the text also has been modified or rewritten where necessary. The additions include a description of the palace of Cnossos, illustrations of the tomb of Agamemnon and the pillars which restored now stand in the British Museum, and plans of all the important Greek temples, with some of those of the Romans. The book needs no further recommendation from us.

English.

The Teaching of English. By P. J. Hartog. 164 pp. (Clarendon Press.) 2*s.* 6*d.*—This book begins with "The average English boy cannot write English." But we might as well say that he cannot understand the mechanism of a sneeze, which, the physiologists tell us, is highly interesting: he has been taught neither. The idea of Mr. Hartog is that we should follow French, and, indeed, he might have added American, models. We shall write English when we study it. And we shall have no time to study it until we throw over our Jonah, *i.e.*, our bundle of new subjects, into the sea. We need more reading, more time to think, and more subjects to which to apply our thought; but we are fast drifting into directions where all this will seem more impossible of realisation than ever. Still, this book may be a rock to stem the current, and incidentally to help to wreck our methods.

DR. ROUSE continues his good work in Blackie's English Texts. We have now *Bacon's Essays* and two *Extracts from Froissart.* The same publishers send a shilling edition, well bound and well printed, of the immortal *Eothen.* Messrs. Longmans publish the *Christmas Carol*, with notes by E. G. Brown, and *Tanglewood Tales*, with notes by Guy Kendall (1*s.* each). The form of the books is good. The Clarendon Press send Sidney's *Apology for Poetry*, with Mr. Churton Collins's introduction, notes, and index (2*s.* 6*d.*); this it would be quite unnecessary to praise. Miss C. L. Thomson is issuing from Messrs. H. Marshall *New English Reading Books.* Book V. contains "Tales of the Empire" (1*s.* 6*d*), and Book VI., "World Stories" (1*s.* 6*d.*). The printing, editing, and illustrations are all very satisfactory—for those who know how to use such books. Messrs. Ginn send *Selections from Poe* (1*s.* 6*d.*) in a quiet-coloured, attractive cover; the book was needed. It is edited, with a good introduction, by Mr. T. G. Gambrill. *Selections from Byron* (1*s.*), edited by Mr. G. Tucker, come from the same publishers. *The Old, Old Myths of Greece and Rome* and *One for Wod and One for Lok*, by T. Cartwright (Every Child's Library, Heinemann) are very attractive booklets (1*s.* each), trying once more to bring into the home schoolroom Scandinavian and classic mythology.

WE have received also reprints of the *Pilgrim's Progress* (Cassell, 6*d*.), *Stories of Ancient Rome* (A. J. Church, 6*d*.). Messrs. Macmillan send six plays of Shakespeare (6*d*. each); it would appear that of the six *King Lear* and *The Tempest* have not been bowdlerised quite enough; the other four, *Macbeth, Midsummer Night's Dream, Julius Caesar*, and the *Merchant* are impeccable. The same publishers send the *Girl's Book of Poetry*, in three parts, 4*d*. each. The pieces are well chosen and unhackneyed. Gibbon's first three chapters are also edited by Mr. Fowler (1*s*); notes and questions are added.

MESSRS. BLACKIE AND SON, LTD., have added to their beautiful Red Letter Library the Poems by Thomas Hood, with an introduction by Sir F. C. Burnand; *Imagination and Fancy*, by Leigh Hunt, with an introduction by Mr. Edmund Gosse; and Kinglake's *Eothen*, with an introduction by Mr. A. T. Quiller-Couch. To their Red Letter Shakespeare, edited by Mr. E. K. Chambers, the same publishers have added *Troilus and Cressida, Cymbeline, Twelfth Night*, and *Antony and Cleopatra*.

History.

Atlas of European History. By E. W. Dow. v pp. + 32 maps + 46 pp. (Bell.) 6*s*.—There are really many more maps than the figure above indicates. Mr. Dow begins with the ancient Eastern empires, and ends with "contemporary Europe." The work has been carefully done. It is based on the best historical atlases and on some original work. The feature that strikes us most is the clearness of the maps. Most of them are coloured. The colours are often effectively used to indicate changes, and where these are marked by differences of shading the work is equally well done.

English History Illustrated from Original Sources, 1216–1307. By N. L. Frazer. xvii + 247 pp. (Black.) 2*s*. 6*d*.—We have already noticed other volumes of this series. This book is as good as they. It contains a hundred and thirty extracts from contemporary authorities, twenty-one pictorial illustrations, some genealogical tables, a review of authorities, and a date summary which is more than a list of dates. The only remark we would make is that, instead of No. 117, we should have preferred the account of the matter from Matthew of Westminster, which is a report of the King's Speech with more human touches than the Patent Roll. We are thinking of the phrases "*erumpentibus lacrymis* veniam de commissis *humillime* postulavit" and "archipraesule resoluto in *lacrymas*." Those "tears" are a fine touch, which would make the scene eloquent to our pupils. There was, in much later times, a House of Commons, of which it is written "bearded men became as children. Sobs and tears burst forth from every side of the House." Only with "strong crying and tears" were the foundations laid of our British constitution.

The Model Citizen. By H. O. Newland. 216 pp. (Pitman.) 1*s*. 6*d*.—A pleasantly written book, giving an account in simple language of British institutions, local, national, and imperial, with many pictures of all kinds. It forms a useful book for the school library or for lessons on "civics." The history is often weak. Magna Carta and the Bill of Rights are represented as more "popular" than they really were. There are also a few slips. It is scarcely exact to say that "the King appoints the bishops" (p. 92). The King does not "adjourn" Parliament (p. 92). It is only the *younger* children of peers who are commoners (p. 98). The House of Lords sometimes rejects Bills which have been passed by a *large* majority in the House of Commons (p. 102). Many Bills *are* debated by the House of Lords (p. 102). Debates are allowed, and sometimes take place, on a "first reading" (p. 113).

Geography.

Highways and Byways in Dorset. (Sir Frederick Treves.) Abridged for schools by George Gordon. 234 pp.; map and pictures. (Macmillan.) 1*s*. 6*d*.

Dorset: a Reading Book for Schools. By H. Harding. 128 pp.; pictures and maps. (Blackie.) 1*s*.

Here are two very different books, both interesting in their different ways and both designed to edify and instruct the young folk of a famous county. "Highways and Byways" follows the lines of Sir Frederick Treves's book. It is not a geography, but a most readable guide book, or rather a most pleasant companion when one is tired of the formal Murray or Baddeley. It is hardly suitable for the class-room, but should certainly find a place in every school library in Dorsetshire (and other counties) where the large original is not available. Teachers (to whom, by the way, it is dedicated) should read it, especially those who from time to time have charge of school parties and school trips. The style is bright and always entertaining; Joseph Pennell's black-and-white sketches are inimitable. The map at the end of the book is not of much value, and is altogether too complicated for school work.

Mr. Harding's "Reader" is of quite another type. It is written for "young Dorset scholars," and is blest with the "I pede fausto" of no less a personage than Mr. Thomas Hardy. Some of its chapters (only a few) are addressed to the young folk in language which we feel sure the more intelligent readers amongst them will resent as beneath them. We do not approve of this writing down to the "scholars." It should not be difficult to strike the happy mean between the adult style of Mr. Gordon's abridgment and the somewhat dull and heavy flow of Mr. Harding's quill. Otherwise the book is not bad. The poorest chapters are those on the most interesting of subjects, "natural history." The list of plants, with the exception of one or two ferns and the bee orchis, would do for any county; so would the birds; and fancy citing the "wild mallard" as a rarity worthy of mention along with the bustard and the cream-coloured courser! Better chapters are those dealing with the history and place-names in Dorset. The pictures are good, but few in number. They are chiefly from photographs by Pouncy, of Dorchester. The maps should have been simplified for school purposes by the omission of many names. The one coloured map is a great sinner in this respect, and is not of much use. But perhaps we are prejudiced by the fact that in the only copy of the book we have seen this map was inserted upside down!

Rhodesia. Information for Tourists and Sportsmen. Issued by the British South Africa Co. 116 pp.; maps and pictures.—This is really a sumptuous advertisement of Rhodesia, got up in the most enticing fashion—paper of the glaziest, type of the clearest, margins wide, and pictures reminiscent of an Art Company's finest work. The "information" comprises an introduction treating of the geography of Rhodesia generally, its accessibility and its railways, and followed by chapters on touring (chief sights and scenes), hints for lady tourists (dress, naturally), the Victoria Falls (superbly illustrated), and sport (climatic difficulties, shooting grounds, game to be expected, and game laws to be learnt). Though the letterpress is interesting enough, and the maps are graphic to a school-

master's content, the charm of the book lies in the pictures. The illustrations of the famous Falls, of the Zimbabwe ruins, of the fauna, and of the natives, are worth framing in groups for the class-room walls. The Company reports that so great has been the demand for copies of the book that the whole of the first large edition was exhausted in a fortnight. It has accordingly printed another edition especially in view of the interesting fact that a large number of copies have been requisitioned by teachers, "who desire to use the handbook as a class book." We question the suitability of "Rhodesia" for this last-named purpose (except from a pictorial point of view), but we have no doubt whatever that it ought to be on the shelves of the school or class-room library.

Mathematics.

Plane Geometry for Secondary Schools. By Charles Davison and C. H. Richards. viii+411 pp. (Cambridge University Press.) 4s.—This text-book differs from most of the recent books on geometry by containing no introduction on practical geometry and by giving a very subordinate place to exercises that depend for their value mainly on drawing and measurement. The opinion is expressed that "too much time spent on experimental and graphical work is wearisome and of little value to intelligent pupils. They can appreciate the logical training of theoretical geometry, while experiments and measurements of far greater interest can be made in the physical and chemical laboratories." For those teachers who agree with this opinion (and they are probably fairly numerous) the course of theoretical geometry here developed will be found to present many points of interest. Euclid's order is, of course, widely departed from, but the method of exposition and the numerous exercises recall the geometry of earlier days. A "best" order of theorems probably will never be devised; the order and the proofs, with the various illustrations and explanations of the technical terms involved, are here presented in a satisfactory way; pupils who successfully work their way through the book cannot fail to obtain both a sound knowledge of plane geometry and a good training in logical reasoning. Books I., II., and III. are entitled "Triangles and Parallelograms," "Areas," and "The Circle" respectively; the treatment of these is amply sufficient for any school course. Book IV., on "Proportion applied to Geometrical Magnitudes," is not so full, though it contains all the usual theorems, including those of Ceva and Menelaus, and the circle of Apollonius. The exercises are very numerous, but whether they will be found more attractive to the "average" pupil now than when they were included in editions of Euclid remains to be proved. It will be a misfortune if the so-called practical exercises become the standard for schools; yet most pupils can do something with these, and derive benefit from them, while only a few become expert in the theoretical work. One may hope that the tendency to lay stress on the drawing and measuring side of geometry will not be allowed to exclude the discipline that careful reasoning about the figures drawn and measured involves.

Cartesian Plane Geometry. Part i. Analytical Conics. By Charlotte Angas Scott. xiv+428 pp. (Dent.) 5s.—The work of Miss Scott in the field of geometry is so well known that this book on elementary Cartesian plane geometry will be eagerly scanned by teachers. The distinctive feature of the book is stated in the preface to be the systematic use of Cartesian line co-ordinates, concurrently with point co-ordinates, from the very first. Whether the subject as a whole is made easier by this course or not is largely a question that experience alone can decide; there is, we think, no doubt that many teachers will hesitate to adopt this method, but it is quite possible that its difficulties are more apparent than real. That line co-ordinates should be introduced at an earlier stage than they now are will probably be granted by many teachers who would hesitate to place them so early as in this book. However that may be, the exposition reaches a very high standard throughout; the geometrical meaning of the analysis is constantly kept in view, and there seem to be few, if any, of the special difficulties of algebraic geometry that do not receive minute attention. In chapter x. there is an excellent summary of the leading properties of conics, many of the theorems there given having been obtained in the earlier chapters. The last chapter, under the title "Miscellaneous Examples," contains a great variety of interesting matter; the last articles of all, treating of the graphical solution of equations, are fresh and bright. Throughout the book are sets of exercises which seem to have been drawn up with great care and which provide ample practice, while at the same time they frequently contain important results. The treatment of points at infinity and of imaginary points does not strike us as particularly good, but the book as a whole is a decided acquisition to the text-books on elementary analytical geometry.

Science and Technology.

An Elementary Study of Chemistry. By Drs. W. McPherson and W. E. Henderson. Revised edition. viii+434 pp. (Ginn.) 6s.—The authors make no claim to originality in offering this work to teachers. They have attempted to deal with the fundamental laws of chemical action from a conservatively modern point of view, and to put them in a teachable form, believing that it is worth while to present such principles in even an elementary and partial manner rather than to shirk their mention altogether, as is done in many texts. Accordingly, a chapter is devoted to reversible reactions and chemical equilibrium; this is clearly written, and should form an excellent basis for the teacher to lecture from, although it seems somewhat too condensed for the young student himself. The work appears quite up to date; indeed, it may be noted that the oxygen standard for atomic weights has been adopted throughout. The authors do not believe that this introduces any real difficulties in making perfectly clear the way in which atomic weights are calculated. A feature of the book, which we distinctly approve, is the recognition of the importance of some discussion of the practical application of these principles to our everyday life. It is apt to be forgotten that many of the students who pass through chemistry classes do not select chemistry as their vocation: it is therefore all-important to lose no opportunity of bringing before their notice the practical application of the science so that they may be led to think about and apply their knowledge in their everyday life. The book properly deals more with general principles and their application than with the enumeration of the properties and preparation of individual compounds. It is very complete, however, and even contains a final chapter of some twenty-five pages devoted to some simple organic compounds.

Practical Chemistry for Army and Matriculation Candidates. By Dr. G. Martin. viii+144 pp. (Crosby Lockwood.) 2s. net.—One would have at least expected to find in the Ph.D. attached to the author's name that his sojourn in Kiel had imbued him with the research spirit, whilst his researches on the affinities of the elements had

shown that he possessed, in Prof. Ostwald's words, quite unusual scientific imagination. It is therefore with disappointment that we find he has prepared an elementary text-book of the old type; rather had we expected him to discourage this kind of instruction. The work is clearly printed, and no doubt cleverly put together. In many places the trail of the serpent is hidden only to reveal itself the more clearly in appendix iii.—hints on regulating work in practical chemistry classes. It is degrading to teach chemistry in such a spirit; and the author's system of marking is, we fear, more likely to lead to the exercise of much ingenuity in the preparation of results than to arousing a keen spirit of competition. Dr. Martin should rather teach his pupils to respect their work and take pride in it for its own sake.

Pedagogy.

(1) *John Bull and His Schools.* By W. R. Lawson. 296 pp. (Blackwood.) 5*s.* net.

(2) *Linguistic Development and Education.* By M. V. O'Shea. xviii+347 pp. (Macmillan.) 5*s.* net.

(3) *Pupil Self-government.* By Bernard Cronson. viii+107 pp.; interleaved. (Macmillan.) 4*s.* net.

(4) *Education by Plays and Games.* By G. E. Johnson. x+234 pp. (Ginn.) 4*s.*

(5) *A Natural Education.* By Mrs. Ennis Richmond. 16 pp. (Street, 42, Albemarle Street, W.) 4*d.*, post free.

(6) *The Social Criterion, or How to Judge of Proposed Social Reforms.* By Bernard Bosanquet. 29 pp. (Blackwood.) 6*d.*

(7) *Calisthenic Cane Drill.* By E. Sully. 39 pp., 12¼×9⅝ in. (Weekes, 14, Hanover Street, W.) 5*s.* net.

(1) THIS book is a journalistic sketch of English education from the point of view of a business man familiar with the claims of Throgmorton Street on the youth of the nation. Mr. Lawson must not be accused of regarding the subject from a commercial point of view only; he is too able a writer and too familiar with the subject to make this mistake, and his book is a more serious indictment than the sub-title suggests. Some pertinent questions are asked about our systems, and some very striking facts are recorded, as well as some remarkable statistical coincidences. The author pleads for a return from the schools showing the occupations of their former scholars, and he instances the melancholy fact that in one suburb of London alone 51 per cent. of boys from the elementary schools joined the ranks of unskilled labour. A very fine tribute of praise is awarded the secondary schools. "They produce men of finer character and stronger moral fibre. Now and then equally good men may emerge from the primary schools, but they are exceptions. In the middle class they form a large majority." The book is extremely interesting reading, full of shrewd remarks, and it is as accurate a conspectus of the general situation as can be compressed into three hundred pages.

(2) This valuable contribution to the psychology of language teaching is based on the results of a series of experiments with "real" children. Part i. deals very fully with the non-reflective processes in the development of speech, and part ii. is a practical treatise on the arts of reading and composition which we can cordially recommend to teachers, for the methods suggested are in accordance with actual and not theoretic conditions. The author boldly states that interest in reading is not native to the child, that spelling does not develop *pari passu* with reading, and that the doctrine of keeping approved linguistic forms before the pupil in order to cause him to assimilate them unconsciously is only partially true. It is refreshing to learn that at Eton one may see classes of boys not more than twelve years of age listening with evident appreciation and enjoyment to stories read and told to them in Latin by their masters, and that Latin is used there as a real language, and not as a mass of dead material suitable only for mental discipline. A bibliography of 118 volumes is included in the appendix of this very valuable book.

(3) Mr. Bernard Cronson's volume provides a complete study of a scheme, now twelve years old, by which a child learns to govern itself in school. This work is well worth study by English teachers, for it is a most suggestive handbook on discipline, and some of its remarks demand attention. It is not often that teachers are reminded that a quiet voice, a quiet manner, a quiet way of doing things are marks of refinement that go a long way in making a school what it is intended to be—a refined home for the children. Many interesting lessons are outlined in the chapters on ethics and civics.

(4) This book is not only an introduction to the theory, history, and place of play in education, but it includes a suggestive course of plays and games adapted to children of varying ages. It is freely illustrated, and we were delighted to renew our acquaintance with hop-scotch, cat's cradle, London Bridge, tit-tat-to, and many old friends of our childhood. Would that we could play them again with the old zest! The book concludes with a bibliography of eighty-nine volumes on play, to which we should like to add Mr. Chesterton's "Organised Games."

(5) Mrs. Ennis Richmond makes an earnest appeal in favour of the co-education of boys and girls from the point of view of the moral effect of each sex upon the other. The author has had more than a quarter of a century's experience of boys in their school life, and she answers the objections which have been raised in a vigorous and logical manner.

(6) Dr. Bosanquet's paper, read before the Edinburgh Charity Organisation Society in order to determine the true criterion by which we are to approve or condemn proposals for social reform, is here reprinted. It is very satisfactory to find that the touchstone of a true reform is the fact that it must tend to develop character and capacity.

(7) A course of flexible wand drill, with thirty-three illustrations and musical accompaniments.

Art.

Instructions to Teachers of Drawing. Department of Public Education, Colony of the Cape of Good Hope. (*Cape Times*, Cape Town.) 1*s.*—Of schemes for the teaching of drawing there appears to be no end. The latest to hand emanates from the Department of Public Education of the Colony of the Cape of Good Hope, and has been prepared by Mr. W. W. Rawson for the guidance of the teachers in the elementary schools of the colony. One may question whether the teacher for whom it is necessary to issue such minute and voluminous directions is quite the person to imbue the children with "a power of appreciation of, and pleasure in, the beauties of earth, sea, and sky" (to quote the introduction); in fact, the very necessity for such detailed and emphatic instructions is a sufficient plea for the placing of this important branch of education in the hands of specialists, or at any rate of such teachers only as show very marked aptitude and ability. It would surely be more desirable not to teach drawing at all than to leave it to the mercy of such teachers as those of whom Mr. Rawson says, in reference to the blackboard examination, ". . . it was evident that teachers do not approach the subject as persons to whom

the blackboard is to be a medium of interpretation of thought or of meaning, but as those whose sole interest in the work will be satisfied as soon as a certificate is obtained." It were vain to hope that this class of teacher is confined to South Africa; and yet the teacher is perhaps not so much to blame as the authority which insists upon, or at any rate places a premium on, square pegs accommodating themselves to round holes. The scheme itself presents no novel features; in fact, in view of some recent pronouncements on art teaching, it has occasionally a decidedly archaic flavour. The introduction, which opens with an admirable justification of the universal teaching of drawing, and the concluding report on the teachers' examinations, are both extremely interesting and should be widely read.

Essentials in Architecture. By John Belcher. 171 pp.; 75 illustrations. (Batsford.) 5s. net.—In no sense a "history" of architecture, and absolutely devoid of dates and technical terms, this charming and eminently readable book treats of architecture from the point of view of the "man in the street" who takes an intelligent interest in the external appearance of the buildings in which, or in the midst of which, he passes his life, or which he may encounter in his travels at home and abroad. Supported by a wealth of well-chosen and excellently reproduced illustrations, Mr. Belcher discourses on the various factors which make for artistic perfection in building. He brings his cultured and critical mind to bear upon a variety of delightful examples, ranging from the Temple of Neptune, Paestum, to the tobacconist's shop at the top of the Haymarket, pointing out the varying elements of beauty, separating the good from the bad, and showing by illuminating and convincing sidelights *why* this is admirable and that detestable, in a manner which cannot fail to quicken the critical faculties and powers of appreciation in the most casual observer. This book should be in every school library, and may be cordially recommended as a prize which a boy may be depended on to read, both to his pleasure and profit.

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.

What is Elementary Algebra?

If interest in the matter and some experience as a teacher may be an excuse, I venture to place my own difficulties with text-books and beginners before any readers who may contemplate further discussion as to how algebra should be taught in schools.

It seems to me that as great a distinction should be made between the rudimentary work of a beginner in mathematics and formal algebra as between pass and honours work, and that exercise in substitution and the use of symbols in simple calculations and arithmetical work is sufficient for the ordinary beginner for a very considerable time. In this connection, I venture to suggest the use in text-books of letters of a different type, *e.g.*, **ma/mb**, while we are in symbolic arithmetic, italic letters being reserved until the notion of "quantity" has been extended. This would help, at any rate, to keep one important fact in view, and help to prepare a beginner's mind for a reasoning process the exact reverse of that in arithmetic, supposing mathematical studies are to be continued into formal algebra.

An easy question in substitution often harasses an "advanced" pupil who has been hurried into algebra on the usual lines, and not seldom, even with him, "algebra" consists in putting letters for numbers. The best idea to attach to "elementary" would seem to me to be fundamental principles. Without these, the meanings of words in their extended sense are not understood, and when the "intelligent" youth begins with applications of them he might ask, further, how he is to know that a result may be arithmetically true though obtained by steps which are arithmetically meaningless. The "operator" method may not succeed; but how, then, is it proposed to teach a subject which is essentially a calculus of operations? A law such as that of, say, commutation, is not more difficult than some of Euclid's axioms; or the teaching of elementary dynamics might also be a vexed question. But inferior text-books never hindered much boy or youth with a mathematical bent, while the best books and the best teaching will be wasted on him who is without it. "Soul-destroying" pages of equations, &c., are absolutely necessary if facility in analysis is to be acquired, but mere mechanical dexterity in common algebra, considered as an end in itself, is educationally useless. The new notions about number will probably work great changes in future books; even as it is, however, the introduction and discussion of new symbols might be a useful exercise in logic for a beginner; for example, the symbol a/b, with appropriate definition (forbid "numerator" and "denominator"), and the deduction of its properties solely from the definition and two simple principles.

D. Edwardes.

Franciscan College, Cowley, Oxford.

Many very abstruse treatises are called "elementary." I believe that within a few years the usual course of "elementary algebra" will be somewhat as follows:

Part i., Algebra for Beginners.—Here the letters used to denote number (i) will represent natural numbers only; (ii) will have such values that the operations indicated can be performed. (For instance, in such an expression as a/b, the number represented by a would be divisible by that represented by b.)

In this part of the work, the various forms of algebraical combinations would be established. Interest would be stimulated by the introduction of simple problems and equations from the very outset.

A natural arrangement would be addition, subtraction, multiplication, simple factors. At this stage simple equations in one, two, and perhaps three unknowns might be fully explained. Then would follow the laws of division, H.C.F., L.C.M., exercises on fractional forms, exact roots, and substitutions in all kinds of formulæ, the letters having such values that all the operations are possible.

This part of the work seems to be what Mr. Edwardes refers to as the development of "fundamental principles." It must be remembered that the "principle of the permanence of algebraic form" is also fundamental as leading to definitions of fundamental operations with new classes of numbers.

Part ii.—Negative numbers, fractions, quadratics, "long" multiplication, the division transformation, "long" H.C.F.

Part iii.—Surds and the various parts of the subject which follow surds in the present text-books. "Graphs"

would be introduced here and there throughout the course, according to the fancy of the teacher.

Referring to specific points in Mr. Edwardes's letter:

(i) If algebra is regarded as a "calculus of operations," then arithmetic must be so regarded.

(ii) The commutative law cannot logically be compared with any of Euclid's axioms. This law, in the case of natural numbers, is a consequence of the law of counting—number is independent of the order of counting and of the character of the things counted.

(iii) My experience is that bad text-books have proved a serious hindrance to many who have become able mathematicians.

If the best text-books and the best teaching are wasted on those who have no mathematical "bent," the teacher's first business should be to discover such pupils, that he may waste no time in trying to teach them.

Rugby School. S. BARNARD.

Solution of Triangles.

IN solving a Δ, given A, b, and c, it is usual to employ the following formulæ:

$$\tan\frac{B-C}{2}=\frac{b-c}{b+c}\cot\frac{A}{2}$$

$$\frac{B+C}{2}=90-\frac{A}{2}$$

$$a=\frac{b\sin A}{\sin B}$$

This involves:

(1) Finding the logs of six quantities:

$$(b-c,\ b+c,\ \cot\tfrac{A}{2},\ b,\ \sin A,\ \sin B).$$

(2) Finding the quantities corresponding to two logs:

$$(\log\tan\tfrac{B-C}{2},\ \log a).$$

(3) Performing nine additions or subtractions and dividing A by two.

(4) Remembering a difficult formula.

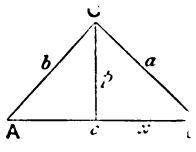
On the other hand, the following method puts no strain on the memory, and is rather less laborious:

$$x=c-b\cos A$$

$$\tan B=\frac{b\sin A}{x}$$

$$\therefore C=180^\circ-A-B$$

$$a=\frac{b\sin A}{\sin B}$$



This involves:

(1) Finding the logs of five quantities:

$$(b,\ \cos A,\ \sin A,\ \sin B,\ x).$$

(2) The quantities corresponding to three logs:

$$(\log b\cos A,\ \log\tan B,\ \log a).$$

(3) Performing seven additions or subtractions.

(The log of $b\sin A$ need only be calculated once.)

In appearance, the first method is perhaps neater, as it does not necessitate the finding of any quantity except the sides and angles of the triangle, but the solution of triangles is usually presented as a practical matter, so that it is hard to see why this method should be followed; and, as a matter of fact, the difference of the sides, their sum, and half the difference of the angles are introduced into the work, though they are not "parts" of the triangle. The second method has, too, the advantage of being intelligible to anyone who understands the trigonometry of a single angle. C. H. HARDINGHAM.

Weston-super-Mare.

Chemistry as a School Subject.

THE valuable discussion in the recent issues of THE SCHOOL WORLD must be of the greatest interest to all teachers of science, and it is to be hoped that now these questions have been raised, the matter will be threshed out thoroughly. Writing as one who has had many years' experience of chemistry teaching in secondary schools, I must agree in principle with much of what "Chemist" and Mr. Lionel Jones say in criticism of Prof. Cohen's article. In particular, as "Chemist" clearly points out, the same argument could be adduced in condemnation of the teaching of mathematics and most so-called "subjects," but it is far from rational to attribute acknowledged failures to the subject itself; rather let us examine the *methods* adopted, and see if they are in accord with the latest and best ideas as to the teaching of science.

It would seem profitable, then, to continue and develop still further Mr. Lionel Jones's line of argument; and taking up the first point raised by Prof. Cohen, that of the study of chalk, the following considerations suggest themselves:

Prof. Cohen states that "at a very early stage" the study of an invisible gas connected with the heating of chalk is begun; if this is the case, it must be condemned unreservedly. The method is illogical. It is absurd to begin the study of any gas before the pupil has realised the material nature of air and has learnt how to draw it or drive it where he wishes; he should further have learnt to prove experimentally the effect of heat on air before any other gas is studied.

Omitting all detail as to how to approach the study of the effect of heat on chalk, if we begin by heating the chalk in an oxy-coal gas flame, their knowledge of the lime-kiln and the limelight leads the boys to *expect* the resulting change into quicklime and the brilliant light produced. Suggestions are made that the chalk has combined with something; the balance disproves this. Scientific method requires the repetition of the experiment, but comparison with the results obtained by the rest of the class supplies the necessary confirmation. Has something invisible—a gas—escaped? How can we determine this? Let the proposed apparatus be sketched, and the proposed method explained in writing *by the pupil himself* in his own words. *Then* he may attempt the experiment with a reasonable expectation of what will take place, and he will probably endeavour to verify his hypothesis by heating chalk in a hard glass tube with a delivery tube leading into water, a device previously used in showing the effect of heat on red lead; he observes that air-bubbles escape, followed by the regular flow which answers his inquiry.

The experiment is repeated and confirmed with a harder porcelain tube and furnace on the lecture bench, and the gas is collected. Let each pupil suggest experiments to be made with the gas, and make them himself. Previous work with air, coal-gas, oxygen, hydrogen, suggests such questions as: Is it different from air? Does it burn? Does it allow things to burn in it? Is it denser or not than air? And the pupil will solve them himself *if allowed to do so.*

Does it dissolve in water? A test-tube full is shaken up with water, and the solution is obtained.

Is the water changed? The taste and the litmus test suggest a *weak* acid.

What may happen if a stronger acid is brought into contact with chalk? Some will anticipate possible displacement of the weaker acid, and the hypothesis is verified by experiment. *All* the acids that are supposed to be stronger (litmus test) than the solution of chalk-gas are found to

behave similarly with chalk, and the resulting gas is found by the pupil to be in every respect identical with that obtained by heating chalk, sufficient proof that the gas does *not* come from the acid. Mr. Lionel Jones's somewhat difficult gravimetric methods are in this way dispensed with, and they appear unsuitable for pupils at this stage of their work.

The gas from the chalk having been examined, the pupil turns to the remaining substance, the quicklime, and compares it with chalk. The effect of quicklime on litmus solution is contrasted with that of chalk-gas on the same solution.

What may result on adding the lime-water to the chalk-gas solution? The resulting solution gradually becomes neutral, and the solid particles are tested and found to be chalk, as is expected. Incidentally, chalk is thus shown to be insoluble in water, and we have an instance of combination at a lower temperature between two substances which produce a compound decomposed at a higher temperature. Mercury oxide and red lead have furnished previous examples of this within narrower limits of temperature. One might indefinitely continue to suggest methods which should meet every one of Prof. Cohen's objections, and he will not be surprised, therefore, if the earnest teacher totally repudiates his statement that the "subject does not admit of simple and logical treatment." Experience absolutely disproves it.

For example, the difficulty of proving that the hydrogen comes from the acid and not from the zinc disappears when the problem presents itself *at the proper stage*, that is, after experiments on (1) oxidation and combustion of certain metals, and (2) hydrogen in connection with water. Zinc burnt in oxygen may easily be shown to produce merely a white powder and no water, though water is produced whenever hydrogen or any body containing it is burnt. Further and conclusive demonstration that hydrogen exists in hydrochloric acid gas (this acid, as the simplest, is first studied) may be easily and naturally led up to by a series of experiments on certain common substances, such as chalk, soda, &c.

Prof. Cohen's pronouncement on the superior value of elementary physics as a school subject leads one to consider what is meant by the term elementary physics. As Prof. Adams remarks in the January issue of The School World, modern and enlightened teachers are disposed to relegate much of the so-called physics to its proper place in the curriculum, and regard it rather as applied mathematics. An experimental science should be founded on *experiment*, and involves use of the imagination, the formation of some hypothesis or theory; without this there is no true experiment, and, as the writer in Prof. Adamson's "Practice of Instruction" remarks, "Only when facts have to be explained by a physical hypothesis should these topics be considered as falling within the province of the science master."

In fact, experience tends to show that the gravimetric methods of recent years are perhaps exerting upon the teaching of chemistry as paralysing an influence as ever was produced by the old and discarded demonstration methods.

In conclusion, as to the value of chemistry, Prof. Arendt, of Leipzig, an eminent German teacher, may be quoted[1]: "Dass die Anfangsgründe der Chemie viel leichter aufzufassen sind, als die der Physik (eine passende Auswahl und geeignete Behandlung vorausgesetzt)." He further goes on to say: "Um das spekulative Interesse fortwährend lebendig zu erhalten, bietet der Chemische Unterricht noch verschiedene Hilfen dar, welche in einer mehr oder weniger lebhaften *Anregung gewisser Gefühle* liegen; das *Suchen* nach geeigneten Mitteln zur Verifizierung einer Annahme oder einer Schlussfolgerung, das *Erwarten* des vorausgeschenen Erfolges, die Freude am *Gelingen* beim Eintritt des letzteren halten das Gemüth in einer steten Spannung und das Interesse auch für die elementarsten Dinge wach."

These words were written twenty-two years ago, and my own experience convinces me more and more that Arendt was no mere idealist. But do the conditions under which science masters generally work in our secondary schools give them reasonable opportunity of considering the development of their teaching from a psychological point of view? "That is another story." C. A. Pauls.

Rutlish School, Merton.

[1] "Lehrproben und Lehrgänge aus der Praxis der Gymnasien und Realschulen: zur Förderung der Interessen des erziehenden Unterrichts." (Seite 79, Heft 6. Januar, 1886.)

Parallel Grammars.

In connection with my article on "Economy in Teaching" in The School World for January, a correspondent writes me to point out that the Germans followed our lead in the matter of parallel grammars. At the Berlin School Conference, December, 1890, Schiller was still pleading for parallel grammars in Germany, while Sonnenschein's parallel grammars were planned in 1884, and were in actual use, in proof, at the Wimbledon High School in 1885. While delighted to give publicity to this patriotic protest, I have to point out that, unless I am misinformed, parallel grammars form a part of the German system. Unfortunately, the same cannot yet be said of England. John Adams.

Hampstead, N.W.

"League of the Empire" Day.

May I ask you to do us the courtesy to remind headmasters and headmistresses that essays for the Lord Meath Empire Day Challenge Cup and £5 5s. prize offered by the League of the Empire to secondary schools are due on March 1st? The subject is "State and criticise the Relation between Great Britain and any other Country or Crown Colony with which you are acquainted." Word limit, 2,000 words. Age, fourteen to eighteen years.

Some of the essays competing for these prizes have already arrived from the colonies. Particulars of the competition may be obtained from the office of the League.

E. M. Ord Marshall (Hon. Secretary).

League of the Empire,
Caxton Hall, Westminster, S.W.

The School World.

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THE LANTERN IN CLASS TEACHING OF GEOGRAPHY.

By B. B. DICKINSON, M.A., F.R.G.S.
Rugby School.

THERE is abundant evidence that the optical lantern is now recognised as a necessary part of the equipment of any school in which the study of geography is taken seriously, and the time is approaching when the lantern will be considered even more necessary for class teaching than a blackboard, not only in geography but in many other subjects. Some teachers, no doubt, hesitate to go to the expense of a lantern and the slides; others feel doubtful how far their methods of teaching will be affected; others possibly look upon the lantern as a strange scientific instrument, difficult to work and even dangerous; and, lastly, many have not perhaps realised how much depends on illustrations of all kinds, if merely to visualise and connect with a large-scale map the descriptions of regions which, from the nature of the case, few of the learners can visit. The lantern, in short, is still regarded by many as too sacred for use in class, a valuable instrument to be safely locked up in the apparatus room, only to appear at certain set times in connection with formal lectures and view-slides. Yet view-slides form only a part of the many kinds of illustration for which the lantern is suitable. Diagrams of every description, rough sketches to emphasise special points, elaborate drawings, maps of distributions and of small complicated areas, orographical maps even of the greatest complexity can be thrown on the screen, so as to be visible to the whole class at the same moment. Drawing on the blackboard, at best, can only be rough and inaccurate, and is bound to waste a great amount of time, for it has to be rubbed out when it has served its purpose, whereas the lantern-slide, quite as impressive and far more valuable from its accuracy, remains ever at hand for future use.

Before passing to a brief account of certain useful devices for making diagrams and maps, it is desirable to touch on one or two difficulties which may perhaps have something to do with the hesitation with which some teachers approach the use of the lantern in their class-rooms, and to offer a few suggestions based on experience.

In the first place, *the lantern must always be ready for use,* as ready as the blackboard! This being so, the choice of the illuminant is restricted; the electric arc and the limelight are both put out of court, since in the hands even of the expert they require a certain amount of attention in working, quite sufficient to prevent the teacher from giving all his mind to the lesson. For this reason we have always advocated the use of acetylene, the incandescent mantle, or the three-filament Nernst electric lamp. Of these the acetylene gives perhaps the most trouble, the various forms of the two latter least. The obvious drawback to our choice is the inferior illuminating power at our command, and this must be met by reducing the size of the picture. It is a small price to pay for convenience in working, and in practice other advantages will be found in having a 4-ft. picture which is amply large enough for a class of twenty to twenty-five, and even an incandescent mantle is quite adequate to illuminate this area.

Secondly, it is not necessary absolutely to darken the room. Of course, if the picture is to be large, and if the light of day pours unimpeded on the screen, even the most powerful light will lose its brilliance; but why not use a short focus lens (say 4½ in.) on the lantern, and project the image on to a transparent screen from the back? For a very few shillings a carpenter would make a light wooden framework consisting of four fairly stout laths, about 8 ft. long, kept in position by three light frames a little more than 4 ft. square. When covered with mill-board, or some lighter material, a box will be made, 8 ft. long, with a square section of rather more than 4 ft. The lantern with its 4½-in. lens is firmly fixed at one end, exactly in the centre, and a transparent screen of tracing-paper or tracing-cloth, or, better still, of tightly stretched and oiled cambric, on a frame is fixed vertically in the cylindrical box, at a distance of 6 ft. from the lens. By this means the light of the lantern is not dissipated, and the light in the room is prevented from reaching the screen by the 2 ft. of projecting cardboard. The exact size of the

box is immaterial, but if the size of the picture is increased, the distance between the lens and the screen must be increased in the ratio of 3 : 2 of the length of the picture, *i.e.*, for a 5-ft. picture and a 4½-in. lens the distance should be 7½ ft.[1] An apparatus of this kind takes up little room, and can always be kept ready in a suitable class-room for instant use. It is really surprising how much diffused daylight can be admitted without diminishing the brilliance of the picture.

In the third place, we venture to suggest certain precautions. The picture should not be far above the eyes of the class—it is very fatiguing to keep the neck in a constrained position for any length of time; the diagrams should be white lines or letters on a grey background, so as to save the eyes from being dazzled by a large expanse of white; the maps should be coloured and the view-slides of a brown tone for the same reason; the teacher must know exactly what is shown on the slide and what points require explanation, never forgetting that it needs considerable training in observation before the child-mind (or even that of the adult) can see things which are not quite self-evident in any picture. Lastly, we would add a special note of warning. The temptation to lecture is most insidious, and if it is indulged much of the value of the illustrations will be lost; the pupil will more or less obviously listen with the ear, while his brain will be working in one of those odd corners from which it is so difficult to draw him.

It demands no great skill in photography to make black-and-white diagrams, especially with the new gaslight plates, of which there are so many brands now in the market. Tracing-paper of the finest possible texture is cut to a convenient size, about 5 in. by 4 in., and on this is drawn in pencil a square of not more than 2½ in. The diagram or writing is then carefully drawn with a crowquill in Indian ink within the pencil square. Next the tracing is placed in a printing frame upon a sheet of cleaned glass, and film down upon it a gaslight lantern plate is fitted so that the tracing is accurately centred, and the back of the frame is closed. Magnesium wire (1 in. at 1 ft. is ample) is the best illuminant; development with any of the ordinary reagents, fixing in weak "hypo," washing and drying, is all that is necessary to produce an excellent slide, in which the lines appear white on a dark grey background; it is better, but not at all necessary, to mount it in the usual way.

A great deal can be done, without photography, by direct drawing on the gelatine surface of a fixed and washed lantern plate—there is one firm, we believe, which supplies such plates ready for use. Special care, however, must be taken not to touch the film with the fingers, and when drawing it is advisable to keep a piece of paper under the hand. At one time it was possible to obtain sheets of slightly roughened celluloid, on which beautiful work could be done with a fine pen, and the surface took colour very well; when the work was finished the celluloid was mounted between two cover-glasses. Perhaps the best results are to be obtained on very fine grained ground-glass with pencils of various hardness. When the ground-glass is attached by Canada Balsam to a cover-glass, it becomes transparent, and the grain of the glass is entirely lost. If time presses, scratching with a sharp point on a cover-glass smoked in the flame of burning camphor, or coated with hard varnish, or even mounting between cover-glasses the drawing on thin tracing-paper, will, at a pinch, give quite reasonable diagrams.

Any of the above can be used, provided the object is of the required size, for enlarging or reducing by hand is far too laborious in these days of photography. After all, it is quite a simple matter to pin up any object to be copied, to see that the lighting is even, to get all parts of the picture quite flat, and then to set up the camera so that the image on the screen is fair and square and of the size required. The exposure varies with the character and colour of the object, the kind of plate, and the source of light, a full description of which will be found in any of the manuals of photography.[1] Artificial light is, on the whole, the least trouble, and our experience leads us to recommend two incandescent gas lamps, one on either side of the picture, but shaded from the lens; by this means the lighting is very even, and with ordinary care there will be no grain on the slide. The negative is treated in the usual way, and the positive is made on glass instead of on bromide paper.

While we are on the subject of copying, it is worth mentioning that it is the act of copying which constitutes "infringement of copyright," whether the copies are made for private use or for sale. In case of doubt it is well to ask for permission to copy from the owner of the copyright.

Meanwhile the number of lantern-slides of all kinds now on the market is prodigious, but it is extremely difficult to find out from the ordinary list which particular picture will be of use to illustrate a particular point, for the majority of photographers are not geographers. The Geographical Association has once more taken in hand the matter of selecting for its members the really useful slides. The Association proposes by degrees to collect the valuable views, of which there are always a few in most dealers' sets, and to publish from time to time a list with descriptive notes in the *Geographical Teacher*. The chief difficulty is to find helpers to look through the slides of special regions, make notes on the views, and report to headquarters.[2]

[1] A full account of the optical lantern will be found in Lewis Wright's "Optical Projection," published by Messrs. Longmans, which, however, deals especially with the management of the lantern and its accessories for lecture purposes.

[1] Ilford's "Manual of Photography" is very simple and clear, and can be thoroughly recommended to the beginner.

[2] An account of the lantern-slide scheme is to be found in the autumn number of the *Geographical Teacher*, No. 10, vol. iv., part iii., p. 133, which is to be obtained from Messrs. George Philip and Son, 32, Fleet Street, E.C. (post free, 1s. 1d.) Offers of assistance should be addressed to Mr. G. W. Palmer, 32, College Road, Clifton, Bristol.

Few teachers seem to realise how necessary for a sound understanding of almost any geographical problem are large-scale maps, and especially large-scale orographical maps. It is obviously impossible for any but "generalised" maps to be included even in the higher-priced school atlases. How can the details of river windings, deltas, estuaries, water-partings be even indicated in the diagrammatic representation used in the very inadequate maps we so confidingly put into the hands of our pupils? Are we not beginning at the wrong end by expecting them to understand and appreciate a bare skeleton of a map which really requires all the experience of a skilled geographer to clothe with reality? In the case of the British Isles, material is ready at hand in Bartholomew's ½-in. series of bicycling maps and the 1-in. Ordnance Survey; for France, Germany, Italy, and parts of Austria-Hungary similar series can be obtained, but for almost all other parts of the world maps are difficult to procure; they are somewhat expensive, and many are only to be found in certain scientific publications. A few copies each of maps of typical regions will be found most valuable, or a few sheets may be mounted together as a wall-map, but cost and storage soon become burning questions.

The wall-maps at present on the market show on a larger scale the same features as the atlas maps, and in the effort to be simple and graphic, many important points have been so far disguised that the child-mind is trained in a mist of misleading notions; still there are a few really valuable wall-maps, but as they are the work of specialists, their number is limited by the cost of production and the relation of this cost to the demand, for it is sad but true that the purchasers of wall-maps are strangely uncritical, and only too often buy a very inferior article because it is a few shillings cheaper than a good one. Then there are many disadvantages in the use of wall-maps: they deteriorate rapidly unless they are carefully stored, they occupy considerable space, and the problem of displaying them to the class is by no means easy to solve.

For all geographical purposes the map-slide is peculiarly suitable: when shown on the screen it is even more effective than the wall-map; it can be changed far more quickly when, as so often happens, it is desirable to compare or contrast two typical regions; the cost is comparatively small; the storage and display are simple matters; and the durability is great. By means of map-slides prepared by experts,[1] all the most typical phenomena can be illustrated with the greatest accuracy, so that the nature of a glacier, the passes of the Alps, the delta of the Nile, the lower course of the Mississippi, the gorges of the Fraser, the character of Vesuvius, to take a few instances at random, can be made clear to the veriest beginner, especially when they are connected with a few typical view-slides. It is, after all, only by a study of well-selected type regions that the essential principles of geography are gradually appreciated, and until these principles have been grasped the subject will remain what it has been in the past, "mere snippets of disconnected information," or, worse still, "bookwork for the bookworm."

In the millennium, no doubt, all geographical students will be provided with large-scale maps, or with aeroplanes on which to visit the regions studied, but in present circumstances we must do what we can with what we have, and it is our opinion that the lantern-slide, in spite of its fleeting image, is of immense value, provided we do our utmost to fix the impression as firmly as possible in our pupils' minds. One device for doing so has been brought to our notice. The pupils are taught at an early age to sketch important details on squared paper ruled in ¼-in. squares. The cover-glasses of the slides are ruled with fine lines at a convenient distance apart, and apparently with practice considerable facility in this kind of freehand drawing is gained. The suggestion is a good one, and should produce satisfactory results.

In conclusion, one more word of warning on the danger of lecturing. The lantern is an excellent servant but a tyrannical master! If it is once allowed to gain the upper hand, it will induce the teacher to do all the talking, and though the class may be interested for the time, they will not carry away with them one tithe of what the teacher has tried to impress on their minds. They must, by careful questions, be induced to discover and explain the points themselves, and so be led on to put into words the principles illustrated in the map or view before them. A short lesson treated in this way on half a dozen typical slides of a glacier, with a good map of the glacier itself, will give even to the dullest in the class an appreciation of many features of glaciation which he never could get from merely reading a book, or listening to a lecture.

[1] Map-slides of all kinds, from telling diagrams to the most complicated orographical maps of small or large areas, can be obtained from "The Diagram Company," Adela Avenue, West Barnes Lane, New Malden, Surrey. Full Catalogue, 4d., post free.

ENGLISH TEACHING IN JUNIOR FORMS.

By W. H. S. JONES, M.A.
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IN considering the problems which arise in connection with the teaching of English it is necessary to set before us one of two possible limitations to our inquiry, according to our regard for the subject as a means to another end or as an end in itself.

The object of the present writers, however, is to consider the teaching of the mother tongue definitely as a propædeutic study to that of classical languages, and in a less degree to any study whatsoever. The teacher of languages finds himself brought up short at every turn if he cannot

rely on his pupils having a good knowledge of that sentence-structure which is common to all languages; progress in mathematics and the natural sciences is much retarded by inability to express thought in simple and logical English; and, in general terms, mental development seems in some mysterious way dependent upon the powers of self-expression, for language helps thought at least as much as thought helps to make written and oral speech clear and artistic. After much argument the Classical Association seems to have adopted the view put forward here, for in a recent report the suggestion is made that the teaching of English grammar in secondary schools should precede instruction in Latin, and that when Latin is begun the formal teaching of English grammar should cease.

It is necessary before going further to correct a possible misapprehension. It is not proposed to make a fetish of English grammar, nor yet to impose upon the English language a grammatical scheme which is foreign to the genius of that language. So far as grammar is concerned, nothing more is required than a knowledge of the universal principles of language-structure; and these can only be acquired, in the first instance, by reflective criticism of the mother tongue. There is here no attempt to revive in their grim formality the deplorable exercises known by the names of analysis and parsing.

Something must be known of the functions of each part of speech, and this knowledge must arise from actual experience and thought. It may be crystallised afterwards into the form of a definition, but it must not aim at deductive reasoning at an age when the pupils are incapable of reasoning deductively. The earlier lessons on the parts of speech will consist of discovering precisely what each word does. Nouns as names are easily recognised, and the careful consideration of actual adjectives in their natural situation in the sentence will soon give even the young child a very fair idea of logical limitation. In a similar way children can be led to notice that they must not confound the noun and the thing, the verb and the action, the sentence and the fact.

This in itself marks a mental development sufficiently valuable to all the teachers with whom the boy may subsequently be brought into contact. But before a strange language is begun with real profit, something more is necessary than a knowledge of English or "universal" grammar. The pupil must be able to read, speak, and compose simple narrative. He must know how to make the most use of his vocal powers, how to read with expression, and how to describe an event in simple, terse, and precise English. To do this well is not beyond the powers of a child of ten, provided that the school curriculum be not overcrowded with subjects which ought to be begun later.

Before proceeding further it will be well to give a few instances showing how necessary it is to have this foundation firmly laid. Sometimes, after explaining that the Latin accusative case is used to denote the direct object of a verb, the teacher of Latin finds that other cases have been substituted for it in an exercise, and that though the boys have seen and examined a large number of such accusatives. A request for a statement of the rule generally results in some such answer as "the accusative is the object," or "the accusative governs the object." Such an assertion means that the boy in question is using language of which he does not understand the meaning, and further, that he cannot detect an inaccurate or illogical expression. Inquiry leads the writers to believe that other teachers suffer in a similar way from their pupils' inability to express themselves clearly. The modern language master finds himself hampered in the same way as the classical master; the mathematical master has endless trouble in the teaching of geometry, while his colleague, the man of science, may conduct his experiments admirably, but cannot get from his class an adequate description of them. The whole work suffers, and a considerable part of each lesson has to be devoted to giving a few boys a facility in the use of the mother tongue which they should have acquired at an earlier stage. It is not maintained that the school curriculum ought to be divided into water-tight compartments, nor yet that English should be ignored or neglected outside the English lesson. Of course, every lesson (with the possible exception of modern language lessons) ought to teach English; but there is an irreducible minimum which is presupposed before further teaching can be attempted, unless it is going to be hampered on every side by extraneous difficulties. What then is this minimum which must precede the beginning of Latin? Here it should be understood that the writers' remarks are intended to apply principally to such schools as assign a limited time to classics; with an unlimited time good results seem to be possible on any method.

So far as the use of the mother tongue is concerned, this minimum has been marked out already. The pupil must know how to use his voice so that he can speak Latin with fluency and distinctness. He must have learnt to be dissatisfied at using language of which he does not know the meaning; he must understand a description, or be able to describe something without writing nonsense; and finally, he must have some command of language and not be tied down to a few words in expressing his meaning.

In formal grammar the required minimum may briefly be put as follows:

(1) The three chief kinds of sentence: the statement, the question, and the command.

(2) The division of a statement into its two regular components—subject and predicate, and the analogous division of questions and commands.

(3) Division of the subject into nominative and enlargement, and recognition of the means whereby the nominative of the subject is limited by words, phrases, or clauses.

(4) Division of the predicate into verb, direct and indirect objects, complement and extensions of the "simple" predicate, with full recognition of the functions of each part and the solidarity of the whole.

(5) The meaning of complex sentences, and the classification of such sentences into their simpler kinds.

(6) The functions of the parts of speech.

(7) The meaning of the terms "inflection," "case," "number," "person," "tense," "mood," "voice," "declension," "conjugation," "comparison," and perhaps a few others.

This scheme is not meant to be treated exhaustively. All *cruces,* doubtful points, and questions still disputed by grammarians should be rigorously excluded, at least from anything like dogmatic teaching. They may have their value towards the end of the proposed course, as "riders" had their place in the old scheme of teaching geometry from Euclid's Elements. But when all these have been omitted there remains a considerable amount of undisputed ground, and with this the pupil ought to be made perfectly familiar. It is often forgotten that grammatical rules are not like the laws of nature; in fact, they are not laws at all. They merely sum up habits of speech, and it is a knowledge of these habits that is required, and not a subtle inquiry into the exceptions to which the so-called rules do not apply. For instance, it is generally true that sentences must contain a verb, and therefore our scheme excludes all such expressions as "Good!", "No use," which some grammarians class as sentences.

Two or three years will be ample time in which to master this simple programme. If a boy begin at the age of nine or ten, he should be ready to learn Latin with profit when he is twelve years old, which is the time generally considered to be the best, at least in secondary schools where the instruction is not exclusively classical. At this point the teaching of formal English grammar may well stop, for learning Latin, while it presupposes some knowledge of universal grammar, fills up the gaps in that knowledge, and throws fresh light at every point upon what has been learnt before.

During the early stages of Latin the most important point to be driven home is this. Language is the expression of thought by means of certain relations between words; in English these relations are made clear mainly by the order of the words, and rarely by inflected forms, whereas in Latin inflection is the general rule, the order of words having usually a different function, namely, to express emphasis.

Up to the present the discussion has been chiefly concerned with a consideration of what is required; it remains to suggest briefly the way in which it may best be learnt. It has been sufficiently indicated already that the earliest grammatical teaching should be inductive. The boy should become familiar with each part of speech solely through its functions, as he himself recognises them, in the particular sentence under consideration. He must be prepared to meet the word "pretty" as a word which confines the application of a noun to a smaller class of things, as in the phrase "pretty pictures"; he must be shown numerous examples of this limitation, and the idea of limitation must be vigorously impressed upon him by verbal explanation or diagrammatic representation, by every art, in fact, which the teacher possesses. Having once assimilated this idea he will find less difficulty with the "agreement" of the adjective and noun in inflected languages, which it would be a mere pedantry to teach at this stage. In learning the functions of the adverb, similarly, he will meet with adverbs in all possible connections; he will find a word which modifies the force of an adjective and be told that it is called an adverb; he will meet with it when it is modifying a verb and find that it bears the same label. The generalisation in the form of a definition must be his own, checked and corrected for practical use by the superior experience and acumen of his teacher, but still his own. Then, and not until then, can deduction begin, and he will be content to recognise his old friend "pretty" in the guise of an adverb in the ordinary colloquialism "Pretty well, thank you." It will cause him no shock, since his mind has been unprejudiced by any dogmatic assertion that "pretty" is an "adjective of quality."

Various case relations in English can be sufficiently taught by means of our pronouns. There is here ample inflection of case, number, gender, and person, to illustrate and to prepare for the wider scope of inflection in the classical languages. Boys of the classes commonly educated in secondary schools will not habitually make mistakes of case in the conversational use of pronouns (excepting in certain phrases, such as "between you and me"), and it will be quite sufficient in the earlier stages to deal with the phenomena of inflection as we find them. "I hit him and he hit me" will show the beginner clearly enough the real and essential case relation. At a later stage, and as an immediate preparation for his first excursions into the fully inflected languages, he may be shown the more subtle fact of the essential change without accidental metamorphosis in the nouns of the parallel sentence, "James hit John and John hit James."

The procedure thus sketched out for treatment of the words will apply similarly to phrases and larger divisions of the sentence. It will not be difficult for any experienced teacher who is himself capable of logical thought to treat freely, and at the same time clearly, the difficulties which arise in the right use of participial phrases, verbal nouns, and gerunds. The names need only be used when the pupil and master feel equally the necessity for a short title, for purposes of easy reference, to apply to a thing which is thoroughly known and understood.

Such a course of study is not too great for the lower forms of a provincial grammar school or for the preparatory department of the public

school, and it would give to the boys the thorough grounding in the principles of language which is the heart's desire of all those who are called upon to teach Latin to beginners.

On the other matters of which we have spoken only a passing comment is necessary. The right use of the voice needs no more than a unanimous determination on the part of the whole staff of the school to check slovenly articulation, and to insist on an energetic habit of standing or sitting erect to answer questions or to read. The young boy usually produces his voice correctly, and the master's duty is to see to it that he does not form incorrect habits. Intelligent expression in reading and speaking depends primarily upon care and thoughtfulness, and is a matter, therefore, chiefly of a well-balanced mental development. The necessity of proper phrasing must, of course, be pointed out to the boy who does not naturally phrase reasonably well in reading aloud, but beyond this point reading ceases to be within the capacity of the schoolboy, and becomes an art second to none in grace and in difficulty.

Finally, with regard to written composition, little need be said here. The charming book recently produced by Mr. Hartog on the "Writing of English" (Clarendon Press, *2s. 6d.*) deals with the question far more fully and attractively than it would be possible for the present writers to do in this article.

NOTES ON GEOMETRICAL PROGRESSIONS TO INFINITY.[1]

By G. E. Crawford, M.A.

A DESCENDING geometrical progression is the simplest infinite series with a finite sum. For the beginner with a mathematical turn who intends to push his studies further it has, therefore, enormous importance. For the rest of a class it is hardly less important for the excellent, if somewhat severe, mental discipline it affords. The text-book treatment is rather cursory. Borrowing from various sources, and by aid of a few instances of my own, I have constructed a system of concrete illustrations which diffuses light on every side of the subject.

It is well to start by comparing the two series:

$$1+\tfrac{1}{2}+\tfrac{1}{4}+\tfrac{1}{8}\ldots \text{ ad inf. (A) and}$$

$$1+\tfrac{1}{2}+\tfrac{1}{3}+\tfrac{1}{4}+\ldots \text{ ad inf. (B).}$$

Remark that these are different; the first is less than the second, from which its terms have been selected.

Incidentally show that series like

$$1+1+1+1\ldots \text{ G.P. or A.P.}$$
$$1+2+3+4\ldots \text{ A.P.}$$
$$1+2+4+8\ldots \text{ G.P.}$$

have no "sum to infinity," the reason being that each term is greater than its predecessor, or at least equal. Point out that this cannot be said of our two series (A) and (B); here each term is less as we advance. This, therefore, is one essential feature in a series that is to have a definite sum to infinity. Is it enough?

Look closer at the two series. In each, two tendencies—conflicting tendencies—are seen. The endless number of terms helps the sum to grow big; the incessant dwindling of the individual terms tends in the reverse sense. Infinite abundance works against infinite minuteness. Which wins?

Point out that only close examination can determine that crucial point. For instance, the two series propounded, alike in other respects, are in this respect at opposite poles, and the study of them leads to a surprising result. The sum of the first is 2. Prove by a diagram.

Take AB = 1 inch, and put a flag as goal at Z, another inch away from B (Fig. 1). Halve the

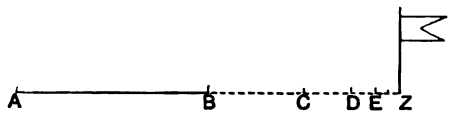

Fig. 1.

interval BZ at C, CZ at D, and so on. Thus, graphically, as line tails on to line, we get a representation of $1+\frac{1}{2}+\frac{1}{4}+\frac{1}{8}\ldots$ Notice about the sum of this series that (1) it can never exceed 2; (2) it will answer the challenge to approach as near to 2 as anyone can exact; (3) incidentally, any term is equal to the sum of all that follow. Here, then, the rapid rate of dwindling wins.

At this stage the fable of Achilles and the tortoise supplies an interesting illustration. Suppose Achilles starts at A, and the tortoise, going half as quickly, at B, so that when Achilles gets to B, the tortoise is at C, &c. The classical conclusion is that Achilles will "never catch the tortoise." And so it seems! The fallacy lies in an ambiguity about the word "never." For passing from the diagram of distances above to a diagram (Fig. 2) of time (minutes) resembling it precisely,

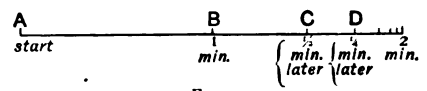

Fig. 2.

and allowing a minute for Achilles to reach B, we are seen to be *confining* Achilles' operations to such time only as represents the sum of the series AZ. It *sounds* infinite, and indeed has an infinite number of terms, but its sum is rigidly *finite, i.e.*, two minutes. Hence *never* means "never within the allotted time of two minutes." In this sense the conclusion is true enough, but the mind unconsciously takes "never" in its usual and wider sense, and hence arises the fallacy.

Now, attacking the other series, we condense it into groups, thus:

$$1+\tfrac{1}{2}+\tfrac{1}{3}+\tfrac{1}{4}+\tfrac{1}{5}\ldots \text{ ad inf.}$$
$$=1+\tfrac{1}{2}+\left(\tfrac{1}{3}+\tfrac{1}{4}\right)+\left(\tfrac{1}{5}+\tfrac{1}{6}+\tfrac{1}{7}+\tfrac{1}{8}\right)+\left(\text{group of eight}\right)+\ldots$$

[1] For those familiar with the subject it may be said that the novel features occur in the latter half of this article.

which is

$$>1+\frac{1}{2}+\left(\frac{1}{4}+\frac{1}{4}\right)+\left(\frac{1}{8}+\frac{1}{8}+\frac{1}{8}+\frac{1}{8}\right)+\left(8 \text{ terms of } \frac{1}{10}\right)+\ldots$$

$$>1+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\ldots \text{ ad inf. (C)}$$

$>$ infinity.

Confirm, by decimal calculation, working to five or six places, and watching the appearance of zeros on the scene. This will prompt some remarks on slow and rapid convergence. Thus, for (A),

$$1 = 1$$
$$\frac{1}{2} = 0{\cdot}5$$
$$\frac{1}{4} = 0{\cdot}25$$
$$\ldots\ldots\ldots$$
$$\frac{1}{2^{10}} = 0{\cdot}00001\ldots$$

and therefore, so far (seventeen terms),

$$\text{sum} = 1{\cdot}99994 \text{ (on adding)}$$

and the error, *i.e.*, defect from 2, is only 0·00006. For comparison, take the other series, (B), and show that the eleventh line must be written before a single 0 appears, and to get 0·00 we should have to go on to the 101st line.

Revert to the condensation groups, and find (α) how many terms of the condensed series (C) are needed to yield, say, 5 as sum (it will need nine), and (β) how many terms of the original series are involved in this (512 terms are involved). Here might be done the common algebraical bookwork on geometrical progression, with its formulæ,

$$\text{(i) } l = ar^{n-1}\text{; (ii) } S = a\frac{r^n - 1}{r + 1} \text{ or } a\frac{1 - r^n}{1 - r}\text{; (iii) } S_\infty\,(r<1) = \frac{a}{1-r},$$

on which last some light is by this time shed.

For non-mathematical heads the most convincing proof of (i) is what may be called the "pyramidal."[1]

	G.P.	A.P.
1st term ...	a	a
2nd ,, ...	ar	$a+d$
3rd ,, ...	arr	$a+d+d$
...	...	...
20th ,, ...	$a \times r^{19}$	$a+19$ times d
...	...	...
nth ,, ...	$a \times r^{n-1}$	$a+(n-1)$ times d.

In proving (ii), for practice, try multiplying the series $S = a + ar + ar^2 + \ldots ar^{n-1}$ by $\frac{1}{r}$ instead of by the usual r, and note that now, suitably placed, the top line overhangs the other at the end, instead of at the beginning, as usual. Here experiment on recurring decimals in form $S = 0{\cdot}7777\ldots$, $S = 0{\cdot}23456$, obtaining their value as vulgar fractions by the above method without reference to the usual fixed rule (multiply by 10 or $\frac{1}{10}$ indifferently, 1000 or $\frac{1}{1000}$, &c.). Note that the extruding part of one line beyond the other is ultimately of the vanishing kind, and has no importance. Try, now, several division sums in the following form:

	Integral Part		Fractional Residue
$\frac{31}{7} =$	4	+	$\frac{3}{7}$
$\frac{1}{1-x} =$ (i)	1	+	$\frac{x}{1-x}$
(ii)	$1+x$	+	$\frac{x^2}{1-x}$
(iii)	$1+x+x^2$	+	$\frac{x^3}{1-x}$; &c. (D)

Verify by multiplying up on the right, when the sum of every line comes to $\frac{1}{1-x}$.

Conduct similar divisions with *numbers* for x, as:

$$\frac{1}{1-2} = 1+2+2^2+2^3+\frac{2^4}{1-2} \qquad \text{(E)}$$

$$\frac{1}{1-\frac{1}{2}} = 1+\frac{1}{2}+\frac{1}{2^2}+\frac{1}{2^3}+\frac{\left(\frac{1}{2}\right)^4}{1-\frac{1}{2}} \qquad \text{(F)}$$

Show that in (E) (where $x>1$) the "residue" is *the* important part (being of a higher order of magnitude, by one, than the term just in front), but in (F) (where $x<1$) this residue is unimportant, being of lower order than the last term retained. Focus attention now, with explanations, on the latter class (F). Show that, with restriction $x<1$, (D) amounts to saying that

$$1+x+x^2+\ldots \text{ ad inf.} = \frac{1}{1-x}.$$

Multiply by a and deduce

$$a+ax+\ldots = \frac{a}{1-x}.$$

A few, perhaps, novel devices are here applicable for summing geometrical progressions to infinity, and illustrating slow and rapid convergence. The first is a practical one. The apparatus required is a tumblerful of some coloured liquid, say strong tea, a large jug of water, and an empty pail. Hold up the full tumbler for all to see. Empty half of it into the pail, then fill up again with water. The colour is lighter; it is a dilution of half strength. Pour away half again, and fill up. Here is a chain of operations that can be indefinitely repeated. In the "end" (explain) the tumbler contains quite clear liquid (show it). Hence "all" (explain) the tea has gone into the pail. But counting the contributions of tea it received, they come to the following when listed: $\frac{1}{2}$ tumbler full strength + $\frac{1}{2}$ do. $\frac{1}{2}$ strength + $\frac{1}{4}$ do. $\frac{1}{4}$ strength + ... This represents, in all, just one tumbler.

$$\therefore \frac{1}{2}+\frac{1}{4}+\frac{1}{8}+\ldots \text{ ad inf.} = 1.$$

The next series easy to sum by a diagram is the geometrical progression the ratio of which is

$$\frac{1}{3}, \textit{i.e.}, 1+\frac{1}{3}+\frac{1}{9}+\frac{1}{27}\ldots \text{ ad inf.}$$

Take any triangle, ABC, and draw the usual three

[1] The arithmetical progression is set side by side, as the inference is similar in both.

medians meeting at A′ (Fig. 3). Fixing on ABC as the unit of area, we see that

$$\Delta ABA' = \Delta ACA' = \Delta BCA' = \frac{1}{3} \text{ unit of area.}$$

Shade it; thus we have a shaded part, ABA′, matching in area a non-shaded part, ACA′, each $= \frac{1}{3}$, and a Δ A′BC which, *pro tem.*, we may call "in abeyance." Dealing with it in the same way by medians (only two fresh ones), we get again (α) a shaded part, A′BA″, which is $\frac{1}{3}$ of $\frac{1}{3}$ of unit; (β) a non-shaded part, A′CA″, of same size; (γ) A″BC, "in abeyance."

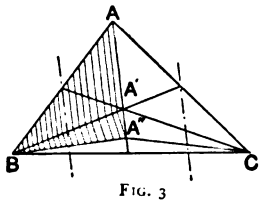

FIG. 3

So, going on, the part (γ) grows less and less, until at last "all" the Δ ABC is accounted for as shaded and non-shaded. But at that stage each of these portions is just $\frac{1}{2}$ a unit of area.

$$\therefore \frac{1}{3}+\frac{1}{9}+\frac{1}{27}+ \ldots \text{ ad inf.} = \frac{1}{2}.$$

This principle applied to a square (demonstration can easily be gathered from the foregoing) shows that the series (with ratio $\frac{1}{4}$)

$$\frac{1}{4}+\frac{1}{16}+\frac{1}{64}+ \ldots \text{ ad inf.} = \frac{1}{3},$$

because there are at each stage two of white to one of black, or black is $\frac{1}{3}$ of total. This is made clearer for beginners if the parts are cut out thus:

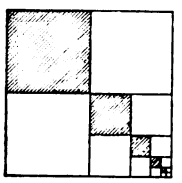
FIG. 4.

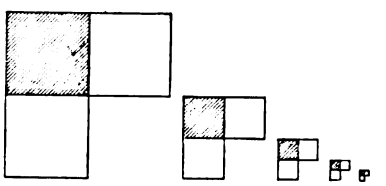
FIG. 5.

For students up to conceptions of solid geometry, this system can be extended to a cube divided by three planes through the centre into eight minor cubes. It then shows that

$$\frac{1}{8}+\frac{1}{8^2}+\frac{1}{8^3}+ \ldots \text{ ad inf. } \left(\text{ratio } \frac{1}{8}\right) = \frac{1}{7}.$$

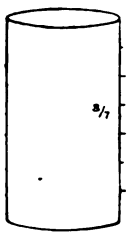

FIG. 6.

Here we may return to the tumbler proof, and show that, by putting a chalk mark at various fractional distances down the tumbler, we can sum to infinity any geometrical progression (decreasing) whatever (Fig. 6). Thus, to sum

$$\frac{4}{7}+\left(\frac{4}{7}\right)^2+\left(\frac{4}{7}\right)^3+ \ldots$$

mark the tumbler $\frac{3}{7}$ of the way down, and empty to the mark every time, refilling again with water. We shall get as contributions to the pail (and, $\therefore$, a total of 1 unit volume of full-strength liquid) the following fractions of a tumblerful:

$$\frac{3}{7}+\frac{3}{7} \text{ of a } \frac{4}{7} \text{ dilution} + \frac{3}{7} \text{ of a } \left(\frac{4}{7}\right)^2 \text{ dilution} + \ldots = 1;$$

$$\therefore 1+\frac{4}{7}+\left(\frac{4}{7}\right)^2 \ldots \text{ ad inf.} = \frac{7}{3}.$$

Extend this proof to the general ratio r, marking the tumbler $1-r$ down ($1-r$ must be positive, and $\therefore r<1$), and so get

$$S_\infty \text{ of } 1+r+r^2+ \ldots = \frac{1}{1-r}.$$

Or, using several, (a), tumblers to operate with at once,

$$a+ar+ar^2+ \ldots \text{ is proved} = \frac{a}{1-r}.$$

Likewise the method of the shaded triangle may be used to find the sum of *any* geometrical progression. The side AC is always to be bisected, and BC divided at Z in ratio r to $1-2r$ (Fig. 7). Thus, if BZ be $\frac{1}{5}$ of ZC, or $\frac{1}{4}$ of BC, we shall find the

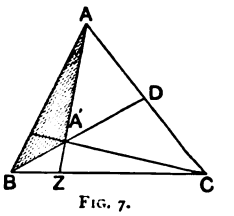

FIG. 7.

$$S_\infty \text{ of } \frac{1}{5}+\frac{1}{25}+\frac{1}{125}+ \ldots \text{ to be} = \frac{1}{4}.$$

For Δ ABA′ is (i) = CBA′ and (ii) = $\frac{1}{3}$ of CAA′.

$\therefore$, of five equal parts, Δ's BAA′, BCA′, each contains one, and CAA′ contains three. Thus, black (BAA′) is to white (CAA′) as one to three. Dealing with the Δ "in abeyance," we get another shaded contribution, and another white, three times as big. Finally, all the Δ is divided up into shaded and non-shaded, as one to three [1] (Fig. 8).

$$\therefore \text{ series of shaded parts, } i.e., \frac{1}{5}+\frac{1}{5^2}+\frac{1}{5^3}+ \ldots = \frac{1}{4}.$$

For ratios other than exact aliquot parts, and for the general r, the investigation becomes confusing for a beginner, though good drill for the clever boys. As we might suspect from the occurrence, just now, of the ratio r to $1-2r$, any case of a geometrical progression in which r exceeds $\frac{1}{2}$ involves the shifting of the point Z outside of BC, to the right, and the novel arrangement of the diagram (though the proof is still sound) is apt to confuse. For a ratio (r) close up to unity AZ swings round A into a position nearly parallel to the base, and the slow convergence of the series and large value of its sum can be illustrated. All this while the class should confirm the above summations (i) by actual decimal work when r is reasonably small and convenient, and (ii) by the formula $\frac{a}{1-r}$. The decimal practice is very important; it teaches pupils, as it were, to smell out a slowly convergent series and

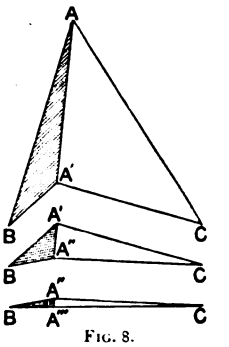

FIG. 8.

[1] Cutting out the parts again makes the matter plainer.

fight shy of it, hunting for a more useful series instead.

Lastly, there is a simple method (of which there are cheap models in the market) for making any geometrical progression to infinity, as it were, tangible and visible, and instantly reading off its sum. Say we take the series

$$1+\tfrac{10}{13}+\left(\tfrac{10}{13}\right)^2+\ldots \text{ ad inf.}$$

Take AC = 1 unit. Erect AB, CD (Fig. 9), any

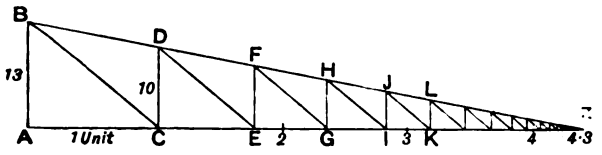

FIG. 9.

two uprights at A and C, proportioning them to 13 and 10, the denominator and numerator respectively of the ratio. Produce BD to cut AC produced at Z. Then AZ shall measure the sum of the proposed series, on the same scale as AC represents 1. It comes to 4·3.

Proof.—Join BC, and draw the lattice-work of alternately parallel lines CD, DE, EF, FG, &c., so that the figure resembles an endless bridge girder vanishing in perspective. Then all the triangles ABC, CDE, EFG, &c., are similar. But CD is $\frac{10}{13}$ of AB; ∴ CE is $\frac{10}{13}$ of AC, EG is $\frac{10}{13}$ of CE, &c.; ∴ AC, CE, EG . . ., end to end, represent the terms of the proposed infinite series. Now Z is the goal to which they tend, but which they never quite reach. Hence AZ is the "sum to infinity."

This model brings out strikingly the notion of convergence. Imagine BZ to be an arm pivoted round B. As it lifts, its point of encounter, (Z), with the ground line is driven further and further to the right. Thus three series with ratios, say, $\frac{10}{13}$, $\frac{11}{13}$, $\frac{12}{13}$ converge less and less rapidly, and have a larger and larger sum. When BZ is *quite* horizontal it never meets ($r=1$), showing that $1+1+1\ldots$ has an infinite sum. Raising it still further $r>1$, a divergent series is graphically presented, with an infinite sum, but a new *convergent* series can be created, to the left of BA, the continuation backwards of the original one.

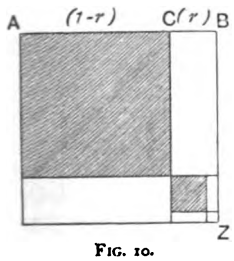

FIG. 10.

Finally, for advanced students the plan already used of a square suitably divided will serve to prove the general formula

$$S_\infty = \frac{1}{1-r}.$$

For take CB (Fig. 10) some fraction (r) of the side AB (unit length) of the square AZ (unit area), and divide each successive square similarly. Then at each stage the new black area created and the new white rectangles are as $1-r$ is to $2r$, and the summation of the black squares gives:

$$\frac{1-r}{1+r}=(1-r)^2+(1-r)^2r^2+(1-r)^2r^4+\ldots, \text{ or}$$

$$\frac{1}{1}-r=1+r^2+r^4+\ldots, \text{ which is}$$

$$\frac{1}{1-x}=1+x+x^2+\ldots \text{ on putting } x \text{ for } r^2.$$

The sum to n terms is not nearly so useful as, and more ungainly than, the sum to infinity. It is therefore quite arguable that it should be found *subsequently*, and not first, as in the books.

It would then depend on the above as follows:

$$S_\infty(1+x+x^2+\ldots)=\frac{1}{1-x};$$

$$S_\infty(x^n+x^{n+1}+\ldots)=\frac{x^n}{1-x^n} \text{ by multiplication.}$$

$$\therefore S_n(1+x+\ldots x^{n-1})=\frac{1-x^n}{1-x}, \text{ to be used when } x<1.$$

For an *increasing* series ($x>1$), write S_n backwards, so that

$$S_n(x^{n-1}+x^{n-2}+\ldots x^2+x+1)$$
$$=x^{n-1}\left(1+\frac{1}{x}+\frac{1}{x^2}+\ldots\frac{1}{x^{n-1}}\right)\left(\text{ratio } \frac{1}{x} \text{ now} < 1\right)$$
$$=x^{n-1}\left(\frac{1-\frac{1}{x^n}}{1-\frac{1}{x}}\right) \text{ by above} = \frac{x^n-1}{x-1}.$$

Multiplying by a, we reach the usual formula:

$$a+ax+ax^2+\ldots ax^{n-1}=a\frac{x^n-1}{x-1}.$$

A good deal of the above may seem to be using a steam-hammer to crack a nut, but it is safe to say that any young student who has gone through the drill of it all has a better notion of series, their genesis, rate of convergence, and sum, than many a man in his third year at a university.

ORGANISED GAMES.

By MARSHALL JACKMAN,

Former President of the National Union of Teachers; Member of the Consultative Committee, Board of Education.

IN the hard, grinding days of "payment by results" the idea of occupying valuable time with organised games would have been scouted by inspectors and teachers alike as sheer waste of time, quite unproductive of any result, and certain to be marked with scanty appreciation by the Whitehall authorities.

Happily, during the last few years more and more attention has been given to the physical condition of the children in elementary schools. At one time it was not even essential to provide playgrounds, and provision for recreation in the time-tables of elementary schools was unknown. When a period of recreation was introduced, it was optional at first; as soon as the system of "payment by results" was abolished, it became pretty general. Later it was made compulsory, but until the 1906 Code, except for swimming, the time for recreation was very limited, and might

not exceed fifteen minutes in the morning session and ten minutes in the afternoon session. In 1896 I had a temporary school, without a playground, attended by some of the poorest lads in Walworth. I put into my time-table "school concert" 3 p.m. to 4 p.m. The performers were to be the lads themselves. H.M. Inspector—a very broad-minded man—said he could not sanction it. It was not work. Eventually I succeeded in securing his approval of the concert by placing it at 3.55 p.m. on the time-table, setting recreation down for 3.55 p.m. also, and closing my registers at 2.5 p.m., in order to get in a full two hours of what the inspector called work.

Two years later, in the permanent school, where a playground was provided, I put football in the time-table for the upper standards. Again the same inspector hesitated to sign it. I at once presented him with a detailed syllabus for teaching football. He jumped at this, and said he thought he saw his way to allow it as a subject to be taught. He signed the time-table with "football" in it as a subject, and on every subsequent visit he facetiously insisted on seeing a class at play. These two incidents indicate the official attitude of the Board of Education ten years ago. I am certain that at that period few inspectors would have felt themselves at liberty to sign my time-table.

In 1906 the Code of Regulations for Elementary Schools provided that instruction might be given in organised games in schools for older scholars. The limit of time was a minimum of one hour, now reduced to half an hour, and a maximum of two hours, exclusive of the time spent in going to or returning from the playing-fields. These regulations were great strides in the direction of the systematic physical training of children in elementary schools. Theoretically, at least, it appears that the physical training of the child in an elementary school has been recognised by the Board of Education as being quite as essential as the mental training.

I say theoretically advisedly, because I am afraid, with some inspectors of the Board of Education, as well as with some inspectors of local authorities, that instruction still looms very much more largely in their minds than physical training. The teacher who spends much of his time in caring for the physical welfare of his pupils may still find that, in the Government report on the school, the inspector notes slight weaknesses in spelling or history, but ignores his untiring work in the playing-fields, the playgrounds, and the school, building up the physique of his pupils.

With these new provisions for organised games, with the systematic medical inspection of scholars, and with a more enlightened view of school work, I believe the physical side of education will take its proper place in our elementary schools.

More than twelve months ago the Education Committee of the London County Council decided to take advantage of the new regulations sanctioning organised games. Arrangements were made for a limited experiment. This was confined to sixty-five council and non-provided schools. The Day Schools Sub-Committee has now reported on the experiment. It is stated that organised games have been found to be of great educational value both as character-forming agents and on account of their hygienic influence. It has been found also that the time spent in playing organised games has in no way detracted from the efficiency of the ordinary school work. In fact, it is asserted that the children are all the better in their ordinary school work for having taken part in these games, and that, so far as the physical aspect of the question is concerned, the exercise involved in the playing of the games has had a beneficial effect upon the health and physique of the children. The committee says that from the reports of the inspectors and organising teachers of physical exercises, and from the observations of H.M. Inspectors and local managers, the success of the experiment appears to be quite marked, and justifies the permanent inclusion of organised games in the curriculum of elementary schools. As a consequence of the result of the experiment, the Education Committee recommended, and the London County Council agreed, that organised games should be regarded as a permanent part of the ordinary curriculum of council and non-provided schools.

The inclusion of organised games in the curriculum of a London school is to be optional. This is a wise decision. The question of the introduction of organised games into any elementary school must depend very largely on the conditions of the school. The situation, size, and staffing of the school will be very considerable factors in determining the possibility of organising such games. In very small mixed rural schools difficulties will present themselves which will be almost insuperable. In some large town schools inadequate or unsuitable playground space, and distance from playing-fields, very materially reduce the opportunities for organised games. In far too many elementary schools where other conditions are favourable, the classes are so large that the effective carrying out of a system of organised games is not by any means an easy task.

With regard to playing-fields, playgrounds, and staffing of schools, there are signs that the difficulties in these respects will be lessened in the near future. Recently one of the strongest arguments used in debate to induce a South London authority to spend money on additional open space was the fact that in South London, owing to the lack of open spaces, the children could only get cricket and football pitches once a fortnight, while in North London they were available once a week. This is a right spirit. It is growing and will continue to grow. The demand will stimulate the supply, as it is already doing in many parts of the country where provision of playing-fields for the children is being constantly demanded and generally with success.

The London Education Authority decided to ask

the Parks Committee to grant facilities in the parks for organised games. H.M. Office of Works was also approached with the same object by the committee. In both cases the request was granted. In the London County Council parks there are no fewer than seventy-two football and cricket pitches available. Similar action will no doubt be taken by other education committees as the demand for facilities grows, and, no doubt, with equally good results. The question of staffing is also occupying the public mind, and there is little doubt that smaller classes in elementary schools is only a matter of time, and that not long. With the increase of open spaces, the better provision of playgrounds, and the more adequate staffing of schools, many of the difficulties of adopting organised games as part of the curriculum of an elementary school will disappear.

It would be impossible in this article to deal adequately with the various organised games which are suitable for elementary schools. I find the L.C.C. Education Committee suggests that the following should be included in a list of suitable games: cricket, football, basket-ball, hockey, and rounders. These, it will be noticed, all require apparatus, and they do not by any means exhaust the list of such games. I see no reason why some very suitable games may not be played which require no apparatus: "prisoner's base," "tag," leap-frog, and—in rural or semi-rural districts—"paper-chasing" lend themselves to organisation, and are healthy and suitable games.

Whatever games are adopted, there are certain principles and aims which should be taken into consideration in making the selection. But more important, probably, are the conditions which should be observed in carrying out these organised games. It is very essential that the children should be taught to organise and manage their own games. Not only will the games be better appreciated, but they will be of greater educational value. The teacher should, so far as possible, efface himself and let the children feel they are free. Of course, the teacher must be present, and, in certain circumstances, must assert himself, but his interference should be of such a character, and exercised at such times, that it will be apparent to the players it is for their general good. In carrying out this condition tact is very necessary.

Organised games should not be spectacular displays. Too often, at the present time, physical training lessons lose much of their value on this account. The games, it must be remembered, are not for the gratification of school visitors, but to improve the physique and assist the education of the pupils. During the time set apart for these organised games, every child selected for the game should join in the play, if not all the time, at least during the larger part. There should be as few "lookers-on" as possible. Cricket or football matches should not be played in the time allowed for organised games, unless a sufficient number of matches can be fixed to include all the pupils playing. Inter-school matches should not be fixed at such times.

Although improvement in physique should be a direct consequence of carefully organised games, the moral and educational possibilities must ever be kept in mind. If the games are suitable, they will provide a certain means of inculcating self-control, the suppression of the individual in favour of the general good, and a building up of those just and generous sentiments which, in after-life, will produce a man of such character that he will "play the game." This instinct is very quick in the national character, and there should be no surer means of fostering its development than tactful supervision alike of play and work. Keenness, concentration of the faculties, the value of combination, observation, and alertness should all follow, and will be reflected in the general work of the scholar if the games are suitable to both age and temperament.

A very important point to consider is that all children should not be compelled to play the same games. Variety of temperament must be taken into consideration. A child who "slacks" at one game may be very keen at another; this is an important point, and must not be overlooked. It is often necessary to foster carefully the desire to participate in some game in such scholars as are naturally of a retiring and quiet nature, but anything in the form of compulsion in such cases is undesirable. Circumstances such as ill-health and malnutrition should ever be kept in mind, or great harm might ensue. The difficulty of the problem in the case of these scholars will be to get them to play at all. We are all familiar with the child who stands against the wall showing a half-hearted interest in even watching a game. This class of scholar should not be neglected.

In organising games in playgrounds, care must be taken that other classes and departments are not disturbed. Playgrounds may be adequate in size but unsuitable on account of their close proximity to the class-rooms.

Where apparatus is required, it should be provided by the local education authority, but children should be encouraged to provide their own. The L.C.C. Education Committee recommends that, so far as possible, schools making use of the same playing-fields should have the use of a common stock of apparatus. I am doubtful whether this interchange of apparatus would be economical, if at all practicable; for under such a system there would be no fixing of responsibility, and although less apparatus would originally be required, it would be worn out more quickly. It is interesting to note that the question of cost of supplying apparatus has been decided by the L.C.C. Committee. The amount has been fixed at threepence per head of average attendance for the initial supply, and one penny per head for renewals and repairs. I am doubtful whether these amounts will be found adequate, especially in connection with cricket and football, as several sets will be

required, even if only one class at a time engages in the games.

The cost should be a trifling consideration when the advantages derived are considered. The policy of developing the mental faculties alone has been too long the great consideration of those responsible for education in our elementary schools. This should be a welcome step in the direction of bringing both mental and physical faculties into fitting co-ordination.

MEDICAL INSPECTION OF SCHOOLS: TARDY GUIDANCE.

THE Board of Education is already beginning to reap the fruit of the "go-as-you-please" policy which marked its memorandum on the medical inspection of the children attending elementary schools, issued towards the end of last November. Seeing that there was never any question as to the main issues involved or as to the points which medical inspection was intended to bring out, and since it is obvious that the value of the results returned from the numerous authorities concerned would largely depend upon their being secured in a form which would make them mutually comparable, it might have been supposed that the first thing to be settled would be a standard form of schedule, in which the several entries could be made under specified headings and in definite order—with, of course, reasonable space for the insertion of special observations in particular or exceptional cases. But it will be remembered that no guidance of the kind was given as to these important details—each local authority being recommended to devise its own methods to the best of its ability. The local education authorities, however, have evinced a modesty—and perhaps a wisdom—at least as great as that of their superiors in this matter. And now, nearly four weeks after the Act has come into operation, the Board has issued a "Schedule of Medical Inspection," drawn up in response to requests which the Board of Education has received for further and more definite guidance as regards the details of the work. Each local authority is at liberty to print an expanded schedule; but, if it do, the Board "consider that at least" it should include the particulars specified. It is suggested that the schedule should be printed on cards, and that the dimensions of such cards should be 8 in. by 5 in. or 10 in. by 6 in. The larger dimension is not too large for convenience in practice. The Board states that it has refused to yield to the pressure brought to bear on it to issue a complete set of forms for carrying out the work, but cheerfully adds that "any forms which experience of the working of the Act may show to be necessary or desirable will be issued in due course."

On one side of each card is to be given the child's name, date of birth, address, and school; its personal history (previous illnesses), and the family history "(if exceptional)" (? exceptionable), with special reference to phthisis. There are also spaces for general observations, and for notes as to the directions (given) to parent or teacher. Upon the other side are spaces for recording observations opposite to the twenty odd points to be investigated on each of the four occasions on which the child will be examined during the period of its attendance at school. It would be an advantage that the child's name should appear on this side of the card also; and there is a blank space at the top right-hand corner suitable for its insertion.

The abbreviated schedule printed in the memorandum is faced by a page of "Notes for Inspecting Officer." Height and weight may be recorded in English measures if preferred; but in the annual report the final averages "should be" recorded in both English and metric measurements. Vision testing and the testing of mental capacity are not to be attempted in the case of children under six years of age, and their hearing is to be tested only in a general way. Snellen's test types at 20 ft. (6 metres) are to be used for testing vision. "Examination of each eye (r. and l.) should, as a rule, be undertaken separately." The only valid exception to the application of that rule is in the case of an absent or blind eye, or the blindness of both eyes, and the recognition of such conditions itself implies at least a preliminary testing of each eye separately.

It cannot be said that the suggested schedule covers more ground than is necessary, if the information resulting from it is to possess real value. Further, the practical outcome of any system of medical inspection of school children will be useful in proportion as attention is given to the particulars in which any child's condition falls short of a healthy standard. Time and labour will be involved, not in examining the obviously healthy and well-cared-for, but in dealing with the far larger proportion of children who fall below that standard—in ascertaining in what respects they do so, and to what extent. Here value depends upon accuracy; and accuracy demands time as well as knowledge. The entries in some of the spaces in the schedule may often be filled in by the intelligent teacher, with advantage; but, even allowing for the time thus gained, the expectation that "the inspection of each child should not occupy on the average more than a few minutes" strikes one as optimistic—or, at least, light-hearted. But the Board of Education appears to have dealt with the whole subject somewhat in this spirit, from the outset.

C. Deslys, Le Zouave and *La Montre de Gertrude.* Edited by L. A. Barbé. 112 pp. (Blackie.) 8*d.*—These are two excellent short stories, forming a capital addition to our readers for intermediate forms. The notes are distinctly good, and there is a good phrase-list, which it would have been more practical to incorporate among the other notes. The editor has further supplied a useful *questionnaire* and a vocabulary which seems complete (*traduire*—on p. 40—is, however, not in the vocabulary). We have noted misprints on p. 20 l. 10, p. 22 l. 1, and on p. 32 l. 4.

SOME NEW SCIENTIFIC APPARATUS.

By G. H. WYATT, B.Sc., A.R.C.Sc.
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IN this article apparatus is described which, as a rule, is suitable for ordinary school purposes both in form and price. Much of the apparatus was exhibited either at the Physical Society's meeting last December or at the annual meeting of the Association of Public Schools Science Masters.

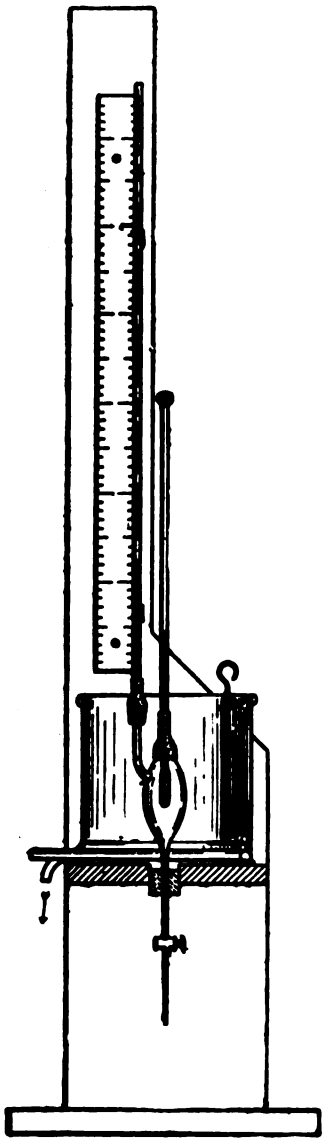


FIG. 1.—Apparatus for measuring expansion of a liquid.

Messrs. Casella[1] have brought out a simple contrivance for measuring the area of any irregular figure, called the White-Bean area scale. It consists of a celluloid plate, ruled with parallel lines. The figure being placed underneath the plate, the intercepts on each line are measured successively on a paper strip, and the sum applied to a horizontal scale engraved on the plate. The area is then read off at once. The accuracy attainable apears to be within about two per cent. (3*s.* 6*d.*)

Messrs. F. E. Becker and Co.[2] have produced an electroscope, the M.V.T., for students' use, which is stated to retain its charge for a whole day. The case is oblong in shape and has its opposite large faces of glass. The shape of the instrument is such that it stands steadily on a table, and the charging disc is kept low, a further point in its favour as an electroscope for the pupil's own use. (5*s.*) The new silica ware is offered by this firm and by others. It has so low a coefficient of expansion that a sudden change of temperature does not produce fracture. Though higher in price than ordinary porcelain, the cost is much lower than it was at quite a recent date; it is worth the attention of science masters. The same firm supplies a transparent stencil plate, the "Nivoc," which renders the drawing of figures a simple matter, and is allowed in London Matriculation examinations. (6*d.*)

Messrs. A. Gallenkamp and Co.[1] have made some additions to their "Technical" series. That shown in Fig. 1 is for measuring the coefficient of expansion of a liquid. It consists of a bulb of about 30 c.c. capacity, connected at the lower end with a capillary tube and tap, and at the upper end with two interchangeable ground-in tubes 65 cm. long. A thermometer graduated in

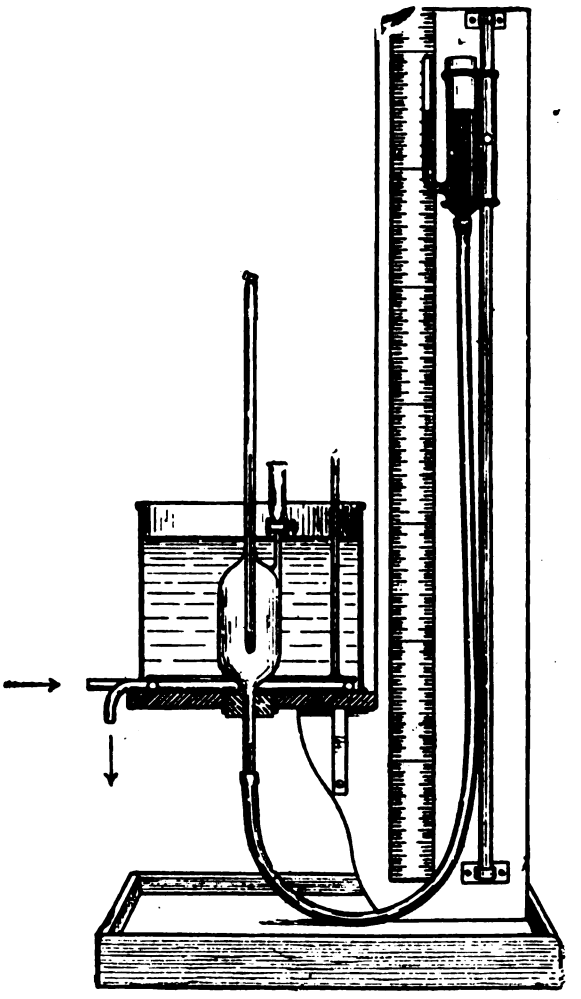


FIG. 2.—Apparatus for measuring coefficient of rise of pressure of gas.

fifths of degrees is ground into the neck of the bulb, and may be secured in position by suitable cement. The bulb is mounted in a copper bath furnished with a steam coil and suitable stirrer. The whole apparatus is mounted on a strong teak stand. The capacity of the bulb at any given temperature is found by weighing the mercury which fills it at that temperature. Similarly, the long

[1] Casella and Co., 11, 13 and 15, Rochester Row, Victoria Street, S.W.
[2] W. and J. George, Ltd. (Successors), 17, Hatton Wall, E.C.

[1] A. Gallenkamp and Co., 19, Sun Street, Finsbury Square, E.C.

side tube is calibrated. The expansion (in glass) of any liquid is then obtained by reading off the height through which it rises when heated through a known range of temperature. (£1 17s. 6d.)

Fig. 2 shows an apparatus for measuring the rise of pressure of a gas with an increase of temperature. The gas is contained in a cylindrical bulb, sealed to the lower end of which is a piece of narrow tubing. At the upper end of the bulb a tap is placed, which enables the pressure of the enclosed gas to be brought to that of the atmosphere, and also serves for filling the bulb when gases other than air are used. A cup above the tap, in which calcium chloride is placed, ensures the dryness of the gas used. A thermometer is placed inside the gas bulb, which is prolonged for this purpose by a piece of tubing into which the thermometer accurately fits, and which is sealed to the thermometer at the top. The bulb is surrounded by a copper bath furnished with a steam coil and stirrer. The tube from the lower end of the bulb is connected with a mercury cistern by pressure tubing. The cistern is furnished with a side tube of the same bore as that connected with the bulb; allowance for capillary elevation is thereby eliminated. (£2 7s. 6d.) It may be added that the parts of these two arrangements of apparatus may be purchased separately.

Lambrecht's hygrometer is a form which is very sensitive. Cooling of a polished surface is produced by blowing into ether, and the instant of appearance of dew is observed readily because close to and in the same plane with the cooled surface, but separated from it, is a similar polished surface, of which the temperature falls very much more slowly. A glass plate shields the surfaces from the moist breath of the observer. (£1 7s. 6d.)

Messrs. J. J. Griffin and Sons[1] have produced two useful novelties in Barton's wave slides, shown in Figs. 3 and 4. In the former a curved

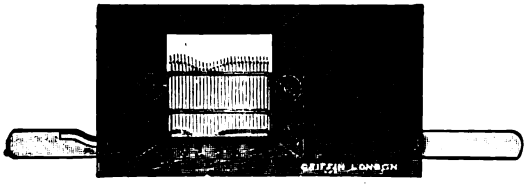


FIG. 3.—Barton's wave slides.

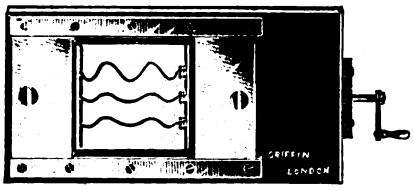


FIG. 4.—Barton's wave slides.

slider causes a series of rods to move up and down, and the marked points on the rods illustrate the motion of particles conveying a progressive wave. In the latter, three bent wires are used, one of which has the form resulting from the remaining two added together. The effect seen on the screen is that of a stationary wave.

Dr. Lees's apparatus for determining relative or absolute heat conductivities is shown in Fig. 5. It consists of a cylindrical box, through which steam is passed. The bottom of the box is formed of a circular brass plate 12 mm. in thickness, in which a radial hole is bored to the centre. The material to be tested is placed between this thick plate and another of like dimensions, to which is fitted a second thermometer, also placed radially. The whole is nickel-plated. (Price, without thermometers, £2 7s. 6d.) In a previous article (October, 1904) reference was made to the cheap slide-rules supplied by this firm. A novelty consists in applying a magnifying cursor to a new 5-in. rule for the pocket. (8s. 9d.)

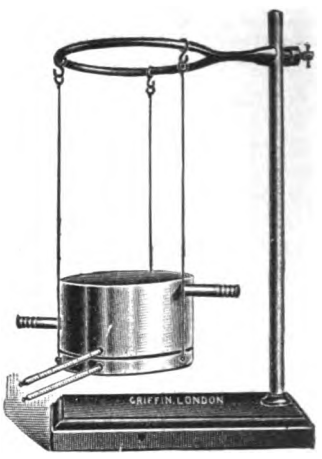


FIG. 5.—Lees's conductivity apparatus.

Messrs. Griffin and Sons issue a catalogue of scientific and technical literature, which will be found useful.

Messrs. P. Harris and Co.[1] have brought out a new student's clinometer and sight compass (Fig. 6). It consists of a silvered dial, graduated in degrees in the upper half and provided with folding sights. About this dial revolves a collar carrying a spirit level and an index for indicating altitudes. The diameter of the outer circle is about 2½ in. (£1 1s.)

A cheaper form of clinometer (McMichael's) consists of a graduated semicircle, along the base of which is fixed a graduated rule provided with sights. The altitude of an object seen through the sights is indicated by a plumb-line suspended from the centre of the graduated semicircle. These instruments should be of use in the teaching of geography. (13s. 6d.)

Messrs. Harris also supply a tangent galvanometer of good workmanship and useful in dimensions. Two coils, 0·2 and 30 ohms resistance, a mirror below the needle, which is provided with a long pointer, and levelling screws are the chief features of the instrument. (£1 5s.)

A pamphlet may be had giving full details of a reflecting galvanometer of a specially neat design, shown in Fig. 7. The bobbins, mirror, and phosphor bronze suspension are carried in a brass case, which fits into a socket, making connection between bobbin and terminals. Tubes with bobbins are supplied of various resistances. (£2 15s.)

[1] J. J. Griffin and Sons, Ltd., Kingsway, W.C.

[1] Philip Harris and Co., 144, Edmund Street, Birmingham.

A useful modification of the ordinary resistance box is that in which the sides of the box are made of glass. It must be of advantage to the learner that he should see the actual construction of any instrument he may use. (Total resistance, 210 ohms. £2 5s.) Messrs. Harris describe a new safety pipette, in the use of which there is very small risk of a fluid being drawn into the mouth. This result is obtained by replacing the ordinary upper part of the pipette by a piece of tubing, in which the capillary bore is interrupted by a wider portion. The liquid entering this causes a slight shock to be felt, and warning is thus given that the mark has been passed. (5d. to 1s. 6d. each.)

Messrs. Newton and Co.[1] make a series of gyroscopes from 21s. upwards, and their list

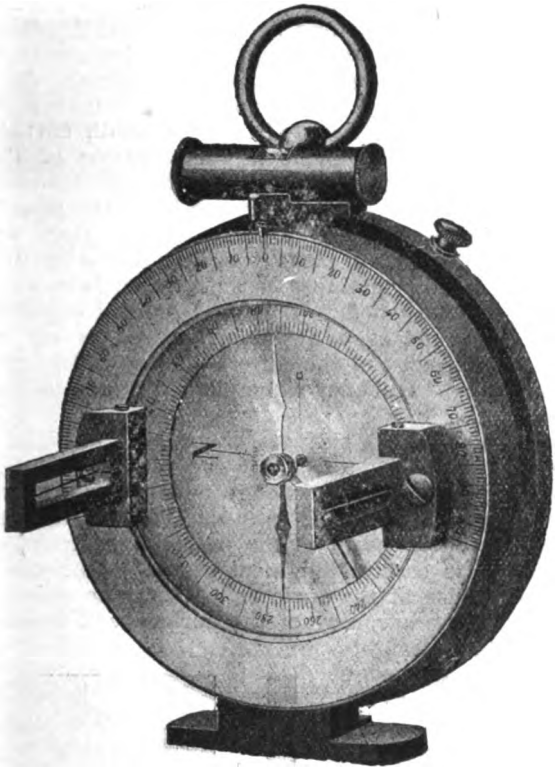


FIG. 6.—Student's clinometer and sight compass.

should be consulted by those engaged in teaching physical geography. They have recently added to their various patterns a gyrostatic model illustrating the principles employed in Brennan's mono-rail. In the model used, a heavy rotating disc is made to keep an oblong metal frame in the vertical position, which but for the disc would be in unstable equilibrium.

Another interesting novelty is the "vitascope" (£4 4s.), a species of telescope by means of which an enlarged image of an object placed from five inches to three feet away from the observer is clearly seen. The aim of the instrument is to supply the means of watching living objects under natural conditions without disturbing them. In consequence of the range of the distances at which the instrument can be used observations may be made either in the garden or indoors.

Messrs. George Philip and Son[1] have brought out a new series of relief models. They are painted and finished to resemble nature as much as possible. Towns and villages are represented by red dots, woods by green, rivers, &c., by blue, and roads by white lines. The models are framed and glazed. The horizontal scale is one-half inch to the mile, and the vertical scale is four times as large. The districts illustrated are the Isle of Wight, the Lakes, &c. (15s. to 20s.)

Messrs. Reynolds and Branson[2] supply Goodman's patent planimeter for measuring areas, suitable for technical schools. (15s.) The same firm also supplies an electroscope, the "Rystos," with glass windows and paraffin insulation, and of a convenient rectangular shape. It is said to retain

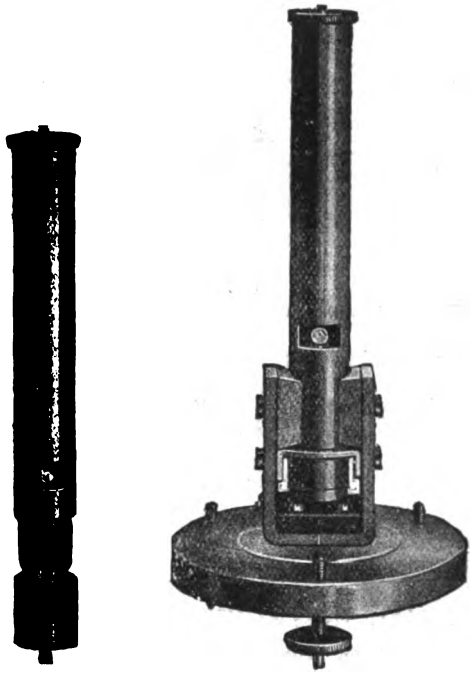


FIG. 7.—The "Harris Improved" reflecting galvanometer.

its charge for at least a day. (5s., or adapted to show leakage caused by radio-active gases, 5s. 6d.) They are also makers of apparatus for the production of lantern-slides, micrographic or ordinary, and for ordinary projection purposes.

Messrs. Townson and Mercer[3] supply a direct vision spectroscope on iron stand in two sizes. (£1 2s. 6d. and £1 12s. 6d.) A useful item for schools which make up arrangements of apparatus for their own use is a 5-in. aluminium wheel on a strong bracket. (7s.) Those engaged in teaching electricity will be interested in Tudsbury's pneumatic induction electric machine. The "plates" are in the form of cylinders and are enclosed in a steel case. The length of spark obtained can be very much increased by raising the air-pressure inside the case. In one set of trials,

[1] Newton and Co., 3, Fleet Street. E.C.

[1] George Philip and Son, Ltd., 32, Fleet Street, E.C.
[2] Reynolds and Branson, Ltd., 14, Commercial Street, Leeds.
[3] Townson and Mercer, 34, Camomile Street, E.C.

the pressure being 10 lb., the spark length was 2½ in. The pressure being raised to 45 lb., the length of the spark increased to 8 in. (£9.)

Tate's specific gravity bottle (Fig. 8) is an improved form for which certain advantages are claimed. The stopper is bored so that two tubes are in use. One of these, A, is used in filling the bottle just as the hole through the stopper in the ordinary pattern. For this purpose the stopper is inserted in the bottle, previously filled with liquid, while in the position 3. The tap is

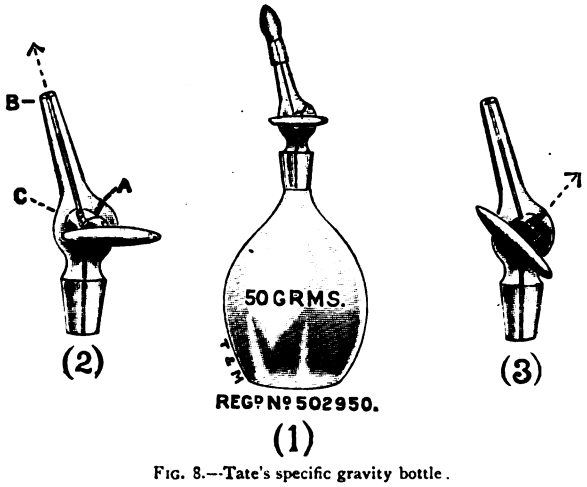


Fig. 8.—Tate's specific gravity bottle.

now turned clockwise into the position 2. The superfluous liquid in tube A is removed by a spill of filter paper. Any expansion of the liquid due to rise in temperature will take place in the tube B, which is provided with a ground-on cap to prevent evaporation. The use of the cap makes the bottle very suitable for the determination of the sp. gr. of a volatile liquid.

MANUAL INSTRUCTION IN WOOD.

A Course for Secondary Schools.

By J. W. Riley,
Municipal Technical School, Rochdale.

II.

In the previous article[1] an attempt was made to deal with the value of manual instruction as a part of education, and to give a brief outline of the general principles involved.

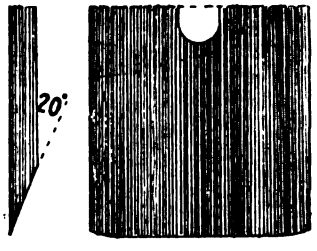
A skilful use of tools is only acquired by repeated practice, and it is therefore necessary, in arranging a course of work, to provide for such a graduation of tool operations that the pupil is able eventually to control properly any tool he may be called upon to use. Unnecessary repetition must, however, be guarded against; hence the need for careful consideration of the order in which models are introduced.

Regular practice in planing is necessary from the beginning. Although in this operation the same tool is repeatedly employed, the varying sizes of material, the different kinds of wood used—with knots and cross-grained wood—all present new aspects.

In the demonstration of the construction and the uses of the plane, the following points should be clearly brought out: the materials from which the tool is made, the position and inclination of the cutter, the grinding and sharpening angles, the use of the "break" or "back" iron, and the different kinds of planes and their particular uses.

A well-kept jack-plane will suffice for "trueing up" the work, and a demonstration of its use can be well illustrated by having two pieces of similar wood—each from six to eight inches square and about one inch thick—one of them being straight-grained, and the other containing one or more knots and being otherwise "cross-grained." Take the straight-grained piece, and first plane one surface *across* the fibres. The resulting surface is *not* smooth. It will thus be shown that in order to obtain a smooth surface it is necessary to plane in the direction of the fibres. Take the second piece: the one containing the knots. After this piece has been planed it will be seen that some parts of the surface are smooth and other parts rough, illustrating the difficulties of obtaining a smooth surface with cross-grained wood. It may be pointed out that the closer the edge of the break-iron is set to the cutting edge of the cutter, the less will be the "plucking" tendency when planing cross-grained wood.

As the planed surfaces must be "straight" and "true," the testing of the work is important. The steel straight-edge and try-square are the tools required. It is well at this stage to impress upon the pupil the necessity of training his eyes in careful judgment of the "trueness" or otherwise of the surfaces. It may be pointed out that the accuracy of the surface will depend upon the straightness of the edge of the cutter. Fig. 4 shows how such a cutter should be sharpened. If the cutting edge is curved, the resulting surface will contain ridges, while if the cutter is perfectly straight to the corners, these corners will make furrows in the wood, and it will be most difficult to obtain a plane surface.



Cutting edge of Plane Iron.
Fig. 4.

Figs. 5 to 9 illustrate models which, with the trenching exercise already explained in the first article, are intended to give good varied practice in planing and in the use of the chisel. The sloping ends of the marble-board (Fig. 5), for example, are cut with the chisel, and the trenches are cut out by vertical paring.

When giving the demonstration lesson on the

[1] The first article appeared in the February, 1908, number.

use of the chisel, it is specially necessary to emphasise the need for a careful handling of the tool, and whenever possible for grasping the handle with both hands to prevent the inexperienced operator from cutting himself. It should

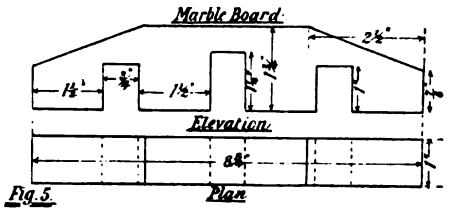


Fig. 5.

be noticed how much more easily wood is cut with the grain than across it. Attention should also be drawn to the difficulty experienced in making the surface smooth when cutting *between* the fibres in a direction at right angles to them, and also to the liability to split off corners if the chisel is pushed quite to the edge.

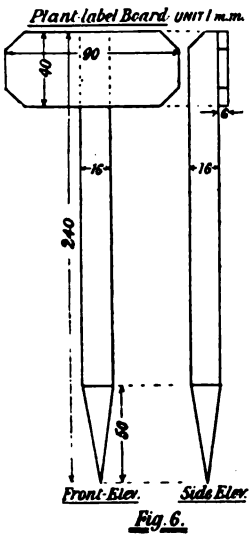


Fig. 6.

As the plant-label board (Fig. 6) and the pen-rest (Fig. 7) are worked to the metric measurement, opportunity is afforded of comparing the metric and the English measurements, and the pupil is thus familiarised with the differences between them. Again, if a unit of

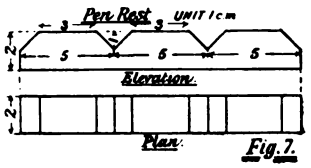


Fig. 7.

one millimetre is adopted for the plant-label board and one centimetre for the pen-rest, the variable unit is illustrated.

As the two parts of the knife-cleaner (Fig. 8) are fastened together with a screw, a comparison between nails and screws, the means of driving them, the holding power of each, and the conditions under which they should be respectively used afford a good object lesson.

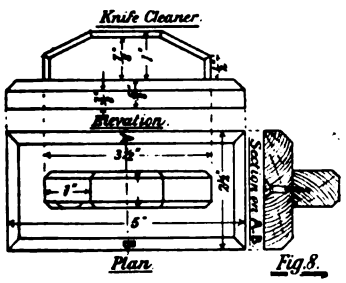


Fig. 8.

In the ink-bottle stand (Fig. 9) the drawing lesson gives an opportunity of showing the construction of the different polygons; while the formation of the square hole into which the ink bottle will rest involves the use of the chisel and mallet in cutting across the grain, and well illustrates the difference between cutting directly across and with the grain. The shaping of the outline of the ink-bottle stand also serves to show the difficulty of planing short surfaces quite "straight."

Fig. 10 shows a match-box holder, with curved edges. The drawing is slightly more difficult than the preceding examples, as it involves the use of the compasses. With the best pupils, variety of design for the back increases the interest. This model also brings in the use of the boring tool—brace and brace-bit. In demonstrating the use of the brace and brace-bit, it is well to review boring tools in general, including bradawl, gimlet, auger, as well as the different kinds of brace-bits, such as shell-bit, nose-bit, centre-bit, twisted-bit, &c., although for most work of this kind the best bit is the centre-bit. The brace itself will serve to illustrate the principles of the lever. Take a large centre-bit and fix it into a chisel-handle. By turning the handle make an attempt to bore a hole in a piece of wood. It will be seen that the process is a very slow one, and is performed with difficulty. Next place the brace-bit in a brace having a small cranked handle, say $3\frac{1}{2}$-in. radius, and notice how much easier it is to bore the hole. Still better results will be obtained by placing the brace-bit in an ordinary brace, which has a 5-in. radius, and it can readily be demonstrated that the leverage obtained by the cranked handle enables the work to be done both quickly and well. The pincers, cutting pliers, screw-driver, chisel (used under certain conditions), handle of bench-vice, &c., will also serve as applications of the same principle.

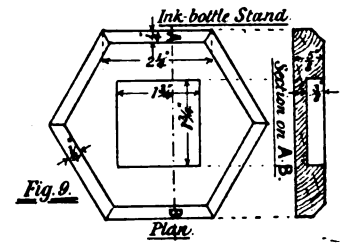


Fig. 9.

In the construction of the match-box holder (Fig. 10), the base piece is made first, and as this has curved ends, vertical paring with the chisel across the grain is needed. Here also it is necessary to point out the need for noticing the direction of the grain, and also to show that the work can be best done by cutting a little at a time. A free use of the try-square for testing the edges is necessary, in order to get the curved edges at right angles to the surface.

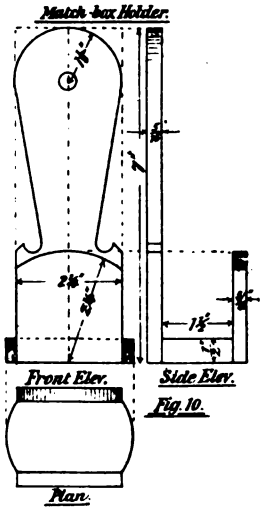


Fig. 10.

The front and back parts of this model, being the same width and thickness, are worked as far as possible in one piece, all the curved edges being finished before the parts are separated. After shaping these curved edges with the chisel,

a little glass-paper, stretched upon a block, will allow finished surfaces to be obtained. As the tendency is generally to abuse the use of glass-paper, and spoil the work, this danger needs explaining and guarding against.

The nailing together of the several parts, owing to the tendency of wood in such short pieces to split, makes the use of a bradawl necessary, and tests the pupils' knowledge of boring tools and their uses.

Fig. 11 shows a trenched joint. The corners are taken off to give additional practice in finishing off the ends. The two parts—being the same width and thickness—are worked in one length, and as much of the work, of cutting the trench and preparing the ends, as possible is done before the two parts are separated. No smoothing off of the surfaces of this joint should be allowed, and the resulting model will serve as a test of the neatness and accuracy so far attained by the pupil.

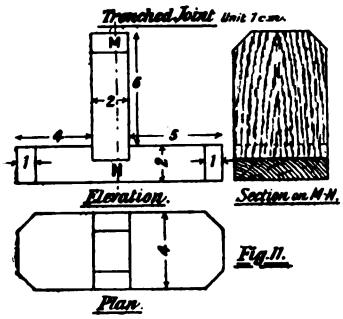


Fig. 11.

The next model (Fig. 12) is a small wall-bracket, in which the back is trenched to receive a shelf which has a support under it. Only the leading measurements—the sizes of material available—are given to the pupils for the drawing of this model; each one is required to design the back, shelf, and support for himself. To guide pupils in their designs, sketches may be made on the blackboard, but with the injunction that no one is to be copied exactly. It is well to point out the danger of abrupt corners, where the grain is short and easily splits off, and also how circular holes, made with the brace-bit and joined by flat curves, may be worked up into an effective design, which is not difficult to carry out.

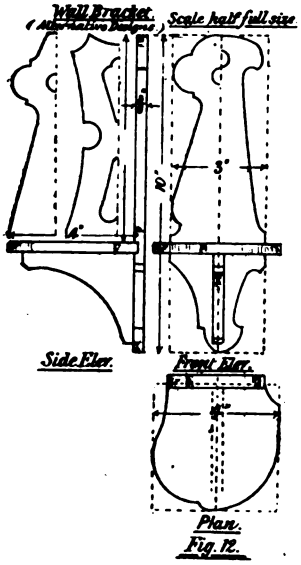


Fig. 12.

In making this wall-bracket, each pupil may cut out, from the board, his own material, and, after trueing up the several parts, mark out the shape upon them. To attain a symmetrical design about the centre line of the back, a full-size paper pattern of one half is cut out and applied to each side in turn. If the curved edges are judiciously designed, a new tool, the spokeshave, may be brought into use. This tool, in which the "sole" is very short to enable the cutter to operate upon curved surfaces, may be compared with the plane.

Many of the models, such as the wall bracket, are improved in appearance by being stained and varnished, or covered with enamel paint. This treatment keeps them clean, and is easily carried out; the method may be shown at this stage.

In constructional woodwork the various forms of half-lap joint are extensively used, and one of these joints—the tee half-lap—gives another opportunity for a test exercise in accuracy of workmanship. The two parts of the joint (Fig. 13) are of the same width and thickness, and, as in the trenched joint previously made, the whole of the cutting of the different parts is done with the material in one length. The part *A* is cut away entirely with the saw. Freehand sketches of this joint, in isometric or oblique projection, one showing it put together and the other showing the "stretch-out," will suffice for the working drawing.

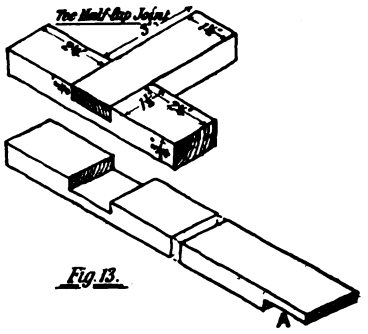


Fig. 13.

The making of a hexagonal prism and a round ruler (Figs. 14 and 15) gives, in the drawing, further examples of the construction of polygons, and provides more difficult examples in planing, and in the case of the ruler an opportunity of using the file. As the drawing (Fig. 15) shows, the material for the round ruler is first trued up "in the square," and the ends cut square; then the corners are planed off so that an octagonal prism is obtained; after this the remaining corners are removed, first with the smoothing plane, then with the file; and the surface is finished with glass-paper. Possibly no model gives such opportunity as the round ruler for testing the sense of touch, as by twisting the model round between the fingers and thumb any ridges or irregularities can be detected.

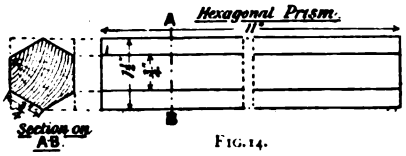


Fig. 14.

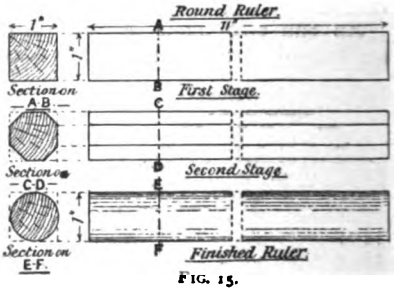


Fig. 15.

The letter-bracket drawn as shown in Fig. 16 is a good example of geometrical projection, and in the designing gives scope for individual fancy. Only the sizes of the different parts are given, and the pupils are required to work out their

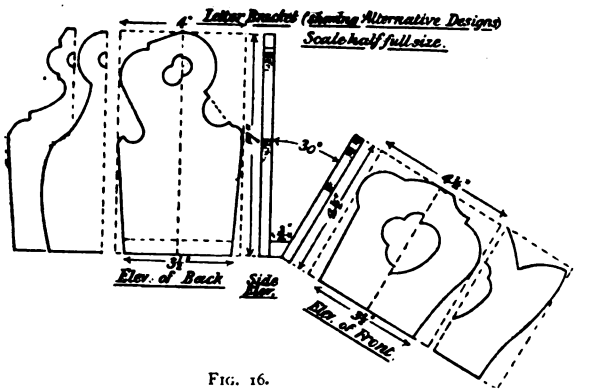


FIG. 16.

own designs. These may be a little more complicated than in the wall-bracket, but the same precautions anent abrupt corners, &c., are necessary. For fastening the parts together, glue, in addition to nails, is necessary.

The kind of wood used in the foregoing models —which illustrate a first year's course when the weekly lesson is of two and a half hours' duration —is varied. Yellow pine, being soft and easily worked, is used for, say, the first six exercises; white or red deal may be used for the joints (Figs. 11 and 13), also for the hexagonal prism (Fig. 14); whilst canary wood proves a good material for such models as the wall-bracket, letter-bracket, and the round ruler. Oak may be used for the last-named. The particular kind of wood and its general application commercially, the sources of supply, the seasoning of timber, as well as the introduction of any fresh tool or new methods of using a tool, all afford opportunity for short object lessons of, say, a quarter of an hour per week. Such opportunities can only be realised to the full by a careful consideration of the order in which the topics are best introduced.

THE PROBLEM OF CONTINUATION SCHOOLS.[1]

AT the age of thirteen the boy from the well-to-do home is transplanted from the preparatory school into the larger world of the public school, and for the next three or four years of his life every possible influence is brought to bear upon him to shield him from evil and to train him to that which is good. His poorer brother of the same age goes out into the rough and tumble of life to earn his own living; he runs errands for a shopman, he sells papers, he sits up behind a delivery van in all the glory of a "nipper," he spends his days weighing out soap-powder into retail packets or pasting labels on mineral water bottles. If he is more fortunate, he is apprenticed to a trade, but usually he has to wait for a year and a half or even longer before any of the skilled trades will take him, and is forced to take up some unskilled employment of the kind above described to bridge over the interval.

In any case, the contrast holds; the very years which in the case of the richer boy are so carefully guarded are just the years when the poorer working lad is exposed to all the roughness and temptation of city life. Mr. Birrell rightly described these years of adolescence as "the unguarded years," and Prof. Sadler has done good service not only to education but to the solution of our most pressing social question—the question of unemployment—by the thoroughness and sympathy with which he has handled the problem of these years, thirteen to seventeen, for the children of the people.

The substantial volume before us opens with a historical review of all the agencies of further education in England, including in its catholic survey Sunday schools, adult schools, mechanics' institutes, university extension, boys' and girls' brigades, and even the Co-operative Holidays Association. The present position of the evening schools in England is next discussed, and certain typical cities and rural districts are treated in full. The industrial aspect is next examined, and we have a most valuable paper from Mr. P. Sandiford on the half-time system, with a comprehensive summary of what is done by various industrial firms for the further education of their employees, an inquiry in which the engineering firms stand out as those which do most for the technical instruction of their apprentices, and the cocoa firms stand out as doing most for the physical and humanistic side of their workpeople's education. Then follows a review of what is done in other countries, notably in Germany and Switzerland, and here again Prof. Sadler has had the help of several well-qualified coadjutors. Finally, Prof. Sadler discusses the future development of continuation schools, and points forward with no uncertainty to some measure of compulsion by local option as the next step of advance for our national system of education, that step itself being preliminary to some universal system of further training. Prof. Sadler's own book, so broad and comprehensive in its *aperçu*, so thorough and full in its detailed work, so sympathetic in its tone, will bring this question at once forward into the arena of practical politics and indicate the lines of wise and successful legislation.

The question is one which cannot be solved by the Board of Education alone: it is intimately bound up with industrial life. At present the conditions of employment make it impossible for most boys and many girls in our large cities to attend evening classes, and, even when these young people are not employed in the evening,

[1] "Continuation Schools in England and Elsewhere." Edited by Prof. M. E. Sadler. 779 pp. (Manchester University Press.) 8s. 6d. net.

the long hours of constraint in the factory leave them too fatigued for any real mental exertion. The most that we can expect from the average adolescent boy and girl under present conditions is that they should not lose what they have already learned. Fully four-fifths of them at the present time are not only forgetting all their "standard" work, but are, in too many cases, rapidly losing all the moral discipline which they learned at school. The waste of character is even worse than the educational leakage. The evening-school work, such as it is, is too exclusively technical in its aim and not sufficiently recreative and social to form any effective counter-attraction to the gay life of the street and the penny gaff. Looking at the problem from the point of view of the average working lad, the lad who is least likely to look after his own educational interests and too independent to be influenced by his home authorities, the most hopeful work described by Prof. Sadler is the continuation-school work done under the Manchester Education Authority in the large lads' clubs of that city. One wonders whether it would not be possible for all lads' clubs to have more of the school, and the evening school on its part to have more of the club. This would be, indeed, the natural result if each primary school had its Old Scholars' Association, and used this association to carry forward the corporate spirit into its continuation-school life.

But the problem will never be satisfactorily solved until the hours of juvenile labour are restricted, so that the employees, male and female, up to the age of seventeen may attend continuation classes at such hours as have been fixed by common arrangement by the local education authority, after conference with the organisations both of employers and employed. To make continuation classes compulsory under present conditions would be simply to fill our gaols with young working lads of independent spirit and to create a new criminal class. The onus must be thrown upon the employer; as Prof. Sadler says, "Certain forms of industry which make large use of boys and girls . . . are in part parasitic in character and get more than they ought, and more than their promoters realise they are getting, of the physical and moral capital of the rising generation." The half-time system must go: the more enlightened manufacturing towns have already abolished it. The elementary schools must be reformed so that the idea of school shall not be so repulsive as it hitherto has been to the large majority of English boys.

The question of teachers must be carefully considered, and no teacher allowed to teach more than two "shifts" per diem. And, lastly, the evening-school curriculum, especially that intended for the rank and file, must be brightened and humanised, so that those who attend may do so willingly, because they feel that they are learning in the school to grow up good and useful citizens, that the school is to them, if we may borrow Rousseau's phrase, "an apprenticeship to life."

THE REIGN OF VICTORIA.[1]

We now have the "twelfth" volume of Messrs. Longmans' "Political History of England," and the ninth to be published. We await only the latter half of the sixteenth century and the century from 1660 to 1760. On the history of England in the nineteenth century we have now four books available for the general reader: Mr. Sidney Lee's "Life of Queen Victoria," Mr. Herbert Paul's "History of Modern England," the present book by Messrs. Sidney Low and Lloyd Sanders, and Prof. Dicey's "Law and Opinion in England."

What is the effect on the mind of the reading of the first three of these? It is that things "happen," that there is no order in them, that ministries come and go almost as in a kaleidoscope, that they deal with crises as they arise, that wars take place only when they cannot be avoided, that laws are passed when it occurs to someone to propose them and the Houses of Parliament approve. Chaos seems to rule as king. That is the result of the chronological treatment, and of looking on the country's history from the reporters' gallery in the House of Commons. The volume under review is exceedingly good, and should be in the teacher's library as a work of reference. But the perusal of it is a weariness of the flesh. Paragraph succeeds paragraph with no more connection than the articles in a dictionary. The passing of a Bill alternates with discussions on Afghan frontier questions, or the propounding of a Budget, "heroic" or otherwise, and we seem to be reading only a glorified newspaper. Of course there are exceptions. The story of the Crimean War or of the Indian Mutiny, of the Gladstone ministry of 1868–1874, or of the Home Rule crisis of 1893, rouses our interest, and in this volume, for the first time, we read an ordered and sober account of the last Boer war. But, on the whole, we cannot understand why anything happens when and how it does. The Reform Bills of 1867 and 1885, *e.g.*, seem to be brought forward because someone in Parliament was thinking of the subject.

The most readable chapter in Messrs. Low and Sanders's volume is the last, in which they break away from the ideal of the series, and, abandoning politics, speak of literature and social development. That success would suggest a better method of treating the rest of the period. For the reign of Victoria is a supremely interesting one. Besides the advances in science and the scientific spirit of which the last chapter speaks so well, there is the almost silent growth of our great Empire. Its development first as the consequence of individual energy, and afterwards as the result of conscious political action, and the rise of the economic problems which now are the main subject of political discussion, together form, perhaps, the finest subject that world-history has

[1] "The History of England during the Reign of Victoria." By S. Low and Ll. C. Sanders. xviii+532 pp. (Longmans.) 7s. 6d. net.

ever presented. Then there is the economic problem at home, the changes in the condition of the "working" classes both agricultural and manufacturing, and the effect of these in the growth of trades unions, in reform Bills, and in the beginnings of a "labour" party. Our "little" wars with China, in Egypt, and elsewhere form still another topic which should be studied with interest and profit. Lastly should come the effect of all this and much else on the play of political parties at home. Not until this "game" is seen to be but a by-product of all the world-forces acting on the mother-country can the comparative unimportance of the political warfare be duly appreciated.

Prof. Dicey's book helps us to give a meaning to home politics, and, at least partly, explains the confusion between the political parties which has existed at latest since 1880. If, then, the matter had been treated as the illustration to some such theory, it seems to us that we might have had a book which would have been written with more interest and profit. One matter which is necessarily new receives illustration and proof. When, twenty years ago, we tried to understand and expound the effect of the revolution of 1832, and set forth that it put an end finally to the influence of the Crown, we were answered that it was only because the Sovereign was a woman that this change had occurred; that we were to wait until we had a King again, and that then we should see. Now we have a King, and the revelations of recent history show that we were both wrong. Victoria did govern as well as reign. The authors of this book state in the magnificent bibliography which forms their first appendix (the second is a list of all the Cabinets of the reign) that the "'Letters of Queen Victoria' appeared too late to be consulted in the preparation of this volume," but they have given sufficient examples of the late Queen's constant activity in home politics, and we know from other books that with the growth of the Empire the British Crown has come into possession of an area of influence which lies almost outside the competence of the "Imperial" Parliament.

We therefore commend this book to our readers, while waiting still for the interpretation of the period which shall be an adequate guide to our electors, and shall teach them the meaning of the lives of their fathers.

Exercises in French Conversation and Composition. By G. Hein. viii + 120 pp. (Harrap.) 1*s.* 6*d.*—A collection of sixty fables, anecdotes, &c., each followed by a *questionnaire* and English sentences for retranslation; the vocabulary which has been added seems complete. The work has been well done; but for reform teachers an edition without the English sentences and the vocabulary would be welcome. Mr. Hein's statement that the stories are not hackneyed is a little bold. Are any stories more familiar than the fables of the dog and his shadow, and of the lion and the mouse, or the anecdotes of the egg of Columbus and of Frederick the Great and the miller of Sans-Souci, or the tales of "La laitière et le pot de lait" and "Le payan et les singes"?

THE ANTHOLOGIST AND THE CRITIC.

THE enthusiast does not often meet with a critic who pleases him; but the most enthusiastic student of English literature need not fear to take up Mr. Stebbing's "Poets, from Chaucer to Tennyson" (2 vols., Frowde, 8*s.* net). The eight hundred pages are the bright thoughts of one who loves and who is ashamed of the motto "Nil admirari." It is easy enough to notice the absence of dissection (we have had dissection enough of late); but here is a writer who loves Chaucer and Donne and Sidney—and tries hard to love Pope. The criticism in the book is often exclamatory, "A ghost! a giant!" but it is suggestive for all that; and the concluding pages say what the world believes, and what the orthodox critic will not allow, that there is no chronology in literature. Nobody wishing to put a clean spiritual encouragement to the study of literature into the hands of one who finds literature dull could do better than buy these volumes.

The study of rogues in literature ("The Literature of Roguery," by F. W. Chandler, 2 vols., Constable, 12*s.*) is as out-of-the-way in its way as the foregoing: it is a mass of learning on the subject of the rogue as opposed to the villain. The author begins practically with Chaucer, and has therefore to neglect the rogue Gibeonites and *Graeculus esuriens*; but the bibliographies of the chapters show how wide his reading has been; and very few students of English literature could give satisfactory definitions of dudders, rufflers, cursetors, ringing taggs, and sky farmers.

> A craver my father,
> A maunder my mother,
> A filer my sister, a filcher my brother,
> A canter my uncle
> That cared not for pelfe,
> A lifter my aunt, a beggar myselfe.

Jonathan Wild and Sherlock Holmes, Becky Sharp, Fagin and Ram Dass rub shoulders with Till Eulenspiegel and the immortal Reynard—but, oh that Prof. Chandler had told us more about their actual doings in the real world of literature. The index of names occupies thirty-two closely printed pages.

From the scholars of the United States also we have, in the Belles-Lettres Series, admirable editions of "All Fooles" and "The Gentleman Usher," by Chapman (edited by Dr. Parrott, Heath, 2*s.* 6*d.*), and "The Fair Penitent" and "Jane Shore" of Rowe, edited by Mrs. Hart. The series, which has been noticed before, puts before us pattern editing: the notes are learned, the bibliographies useful, the print and format excellent.

An "English Prose Miscellany," by J. Masefield (292 pp., Methuen, 6*s.*), gives us short extracts, "beautiful and interesting in themselves, from the works of some of those who have expressed the thought and peculiar genius of their countrymen"; and much nearer to our own time, Mr. L. Binyon selects and arranges "Nineteenth Century Prose" (306 pp., Methuen, 6*s.*). A real service

is done by reminding readers of writers undeservedly forgotten, and by bringing new names before us. The selection seems admirable. Both these "prose" books have illuminating prefaces. Yet both are, and must needs be, but guides to the treasure-houses.

A volume likely to be useful to the lonely student is "Studies of Shakespeare's Characters," by S. Wood (306 pp., Gill, 3s. 6d.). It is a collection of thoughts, very carefully backed up by copious quotation, on the chief characters in twelve of the plays. The author suggests it will be acceptable as a prize book. We agree: but we should not like to see it used as a cram-book. The arrangement is lucid.

THE CORPUSCULAR THEORY OF MATTER.[1]

A FEW years ago many physicists looked askance at the chemical theory according to which the conductivity of an electrolyte is due to the dissociation of molecules into ions; nowadays that theory is accepted almost universally, and we have gone a step further: we now believe that even the atom can be disintegrated. To Prof. J. J. Thomson is due the credit for persistently following up researches connected with the relation between electricity and matter; and although he claims no finality for the hypothesis which he has built up, its value as a stimulus to original research can scarcely be overestimated, even if we admit that it leaves many fundamental properties of matter still unexplained.

Maxwell expressed the opinion that the connection between matter and electricity was to be sought by the study of the discharge of electricity through rarefied gases. This study has been followed most assiduously by Prof. Thomson, with the result that we can now form a mental picture of the atom, which, though dim and undefined in places, is gaining definiteness day by day. The ultimate carriers of negative electricity are called "corpuscles" by Prof. Thomson, although they are more generally known as "electrons." Each of these has a mass equal to the 1/1700th part of a hydrogen atom.

About the carriers of positive electricity less is known, but they are apparently of atomic dimensions. Prof. Thomson has shown that the electrical conductivity of metals can be explained as due to a stream of the corpuscles moving in a direction opposite to that of the so-called electric current; thermo-electric phenomena can also be explained in terms of corpuscles. At first Prof. Thomson considered that the mass of an atom was due to the mass of its corpuscles; on this supposition the number of corpuscles contained in an atom must be very great, and their specific heat would exceed that of the metal which they help to form; at present he considers that the atom comprises a comparatively limited number of corpuscles, and that their arrangement determines the chemical behaviour of the atom. Thus the mass of the atom is no longer supposed to be due mainly, or even appreciably, to its corpuscles.

A theory which enables us to picture a model atom, and to interpret chemical and physical phenomena by its aid, is of the greatest value, even though it is confessedly crude; for in tracing the behaviour of such a model atom in some physical or chemical process, we obtain, not only a vivid conception of that process, but also suggestions of its connection with other processes, with the result that further investigations are promoted.

[1] "The Corpuscular Theory of Matter." By J. J. Thomson, F.R.S. Second impression. (Constable.) 7s. 6d. net.

THE ORDER IN WHICH SCIENTIFIC IDEAS SHOULD BE PRESENTED.[1]

By Prof. H. A. Miers, D.Sc., M.A., F.R.S.

Instead of dealing with the order in which science subjects should be taught, as was originally intended, I propose to consider rather the order in which scientific ideas should be presented. This, you will see, is somewhat wider, for it includes the order in which ideas should be successively presented to the pupil within one and the same subject: a matter of equal if not greater importance. Besides, I would strongly deprecate any too rigid demarcation of science into subjects. A great deal of harm has, I think, been done in the past by attempts to keep mathematics, mechanics, physics, and chemistry apart from each other, and to confine them to different teachers.

Please remark also that my subject is the "order" and not the "method" of scientific teaching. I have far too firm a belief in the individuality of the teacher to suggest that any one method should be prescribed for the teaching of science. However, while I think that individual experiments in method may be encouraged, I do feel that it is in this matter of order that scientific teaching lacks system and is placed somewhat at a disadvantage with other subjects in which there is a recognised order based upon prolonged experience; and what we have to secure is that science should form an integral part of any liberal education, and should stand upon the same level as languages and mathematics.

Any opinion to be of real value and to carry conviction must be based upon personal knowledge; the opinions which I express to you shall therefore be based on my own experience, and it is for you to decide whether the experience of one who is occupied in teaching of a quite different sort from yours is of any value to you as schoolmasters.

I suppose that one of our most serious troubles is the difficulty of ascertaining at a given moment whether the pupil really understands what he appears to be taking in; we can find it out afterwards, and sometimes too late, by examination or otherwise; but it is very difficult to put oneself into the mental attitude of the pupil—especially difficult for those who have to handle large classes.

I have generally found, when I try to analyse a pupil's difficulty, that the fault is my own, and that it is because I have presented ideas in the wrong order, and assumed

[1] From the presidential address to the Public Schools Science Masters' Association delivered on January 14th, 1908.

something which is not yet familiar to him; there is a gap somewhere, and it is not easy to bridge these gaps afterwards.

I have often cast about for some principle to guide me in the succession of ideas which will be most intelligible to the beginner, and will best lead him along a path where there will be no need to retrace his steps in order to pick up a lost clue, and I have generally found this principle in the history of my subject. Study the order in which the ideas in a science have been successively developed in its past history, and I believe you have a very useful guide which may be followed in presenting them to the pupil. The historical order, if not necessarily the most logical, is often the most natural. There is no need at any stage to introduce what have subsequently proved to be errors; it is not necessary to introduce eccentrics and epicycles in teaching astronomy, or a phlogiston theory in chemistry, unless for the purpose of pointing out in passing that they will not suffice. But is it not easier, for example, to introduce the conception of the atomic theory by the process according to which we now believe it to have presented itself to the mind of Dalton rather than by keeping atoms entirely out of sight until the law of multiple proportions has been mastered? Is it not, except for a pure mathematician, easier to develop Fresnel's theory of double refraction by the process which, as we know from Verdet, was really employed by Fresnel, rather than to deduce it from the elastic properties of the ether? What I counsel is the presentation of the ideas, freed, it may be, from the old nomenclature and expressed in modern phraseology, illustrated, it may be, by new and better examples, but laid before the pupil in the historical order so as to allow the science to unfold itself before his mind in a natural sequence. I have found this principle so helpful in teaching my own subject that I have been led to inquire whether it may not prove equally helpful in others, and even whether it may not be a useful guide in deciding the order in which different subjects may best be taught.

I must not be understood to mean that one can literally trace a sequence of sciences in the history of intellectual progress which can be followed in the order of school subjects. I do not propose that the chronological sequence of Euclid, Archimedes and Eratosthenes, Hipparchus and Ptolemy, and the Arabian chemists should induce us to adopt the order geometry, mechanics, physical geography, astronomy, and chemistry, although, by the way, this would not be a bad beginning for a scientific education. But I do mean that if you wish to decide at what point to introduce a given scientific idea, consider the period at which it became active, and inquire what was the state of scientific knowledge at that time. I say became active, because for our purpose the atomic theory began to bear fruit in the time of Dalton, not of the Greek philosophers; electricity dates from the frictional machine and voltaic pile, not from the early observations on amber.

I shall not be surprised if I am told that the principle is well recognised and is employed in some schools; neither shall I be surprised if I am told that it has been tried and rejected in others. All that I can say is that I do not discern it in many of the books which happen to come into my hands, or hear of it from the teachers whom I meet; I am well aware that there can be nothing new in the general principle, but Pestalozzi and Comte and Spencer apply it rather to the development of the mind than to that of a particular field of study.

Let me now go back to school education and inquire how the principle may be applied; and I fear that you will find that here my remarks become really an inquiry addressed to you who have experience, in the hope that you will be able to answer the question whether there is a natural order that can be followed in school teaching.

I am aware that the widest difference of opinion exists as to what is to come at the very beginning of scientific education in schools. Are we to prepare the way by physiography, of which such great things were expected twenty years ago as a means of introducing children to the processes of nature without the need of laboratories and apparatus; or by nature-study, in order to cultivate their powers of observation and reflection; or by mensuration, which must lie at the root of all experimental work?

It may be argued from the history of science that observation should precede experiment, and that a boy should learn something of the world by which he is surrounded before he enters the laboratory. Here let me say a word about training the powers of observation. This is often regarded as one of the great purposes of experimental work; but I do not think that, in this respect, the laboratory has quite fulfilled expectations. It is true that the physics and chemistry of the laboratory train a student to observe, but only to observe a quite special class of things, which are, moreover, quite aloof from the objects and events of ordinary life; and the result of this upon some pupils is that they cease to cultivate the same powers of observation when they have left the laboratory. I have known some men, the keenest possible observers, who have never been in a laboratory or made an experiment in their lives, and of whom one feels sure that the faculty would not have been sharpened by any amount of laboratory work at school.

Just think of the quickness of eye and the alertness of attention developed in some boys to whom laboratory work is a mere task by their games, by shooting and fishing, and by travel. Mere laboratory training assumes that all boys are going to make experimental research the business of their life.

Please do not think that I am expressing any personal distaste for or distrust of laboratory work; my own instincts and interests are entirely on the side of experimental research. I believe that the spirit of inquiry should be the real inspiration of all scientific teaching, and that there is absolutely nothing that can be compared with experimental work as a means of promoting this spirit. But do not let us deceive ourselves and assume that laboratory training alone is an adequate training in observation for the ordinary boy who has no thought of becoming a scientific investigator in later life. At the very outset of his education he should be taught to notice the ordinary objects and events of his own world, and to draw his scientific nourishment from them.

If a child is not taught right notions about things which must force themselves upon his attention, he is certain to acquire wrong notions about them.

These remarks might suggest that I would advocate nature-study as the beginning of scientific training, and in a sense this is so; but in nature-study I would include the intelligent observation of anything or everything that is going on round us, and not merely the processes of nature familiar to those who lead a country life. Interesting facts which illustrate scientific principles are to be found just as much in town as in the country, and I see no reason why works of human ingenuity should not be included in an age when the railway, the motor-car, and the bicycle are familiar to all.

If only ordinary boys can early in life get into their

heads the notion that science is but the intelligent study of ordinary things, they will cease to regard it as a mere educational task. To some boys the growing of a bean or the study of a fungus seems as far removed from the interests of ordinary life as a precipitate in a test-tube or the chorus of a Greek play, unless it all forms part of a training which includes also other more familiar things. In one of the British Association reports a distinction is drawn between scientific teaching given for the sake of information and that given for the sake of intellectual training; scientific education should consist of both; and I believe that one object of the earliest teaching should be to give information, even though it cannot yet be fully intelligible; the inquisitiveness and extraordinary memory power of a child enable him to acquire, while quite young, knowledge which will afford countless illustrations of scientific principles to be used later. Let me add that I think it should be also an object of early scientific education to stimulate the imagination and the love of reading, which are very easily utilised in young children and are too much overlooked by many modern teachers. Certainly I can well remember that it was the fascination of physical geography acquired through books that first really made me care for science and desire to go on to experimental work. However, this early education—call it nature-study or what you will—should be rather a matter for preparatory schools, and perhaps the time is not far distant when all boys coming to a public school will have received some such informational teaching; my point at present is that, to be of real use for later training, it should be particularly designed to lead up to the experimental work. In school teaching there is a great want of continuity, and when a boy passes from nature-study to practical mechanics or chemistry or mensuration he thinks he is passing to a new subject quite unconnected with what he has done before.

My suggestion is, therefore, that observational work should come very early in the teaching of a child, just as it came before experiment in the history of science, that it should deal with the common objects and events of ordinary life, and that it should be taught with the express object of imparting information that will be of use in the practical teaching of experimental science that is to come next. It is an advantage that this observational work requires no special apparatus—no specialists as teachers. But let it be accompanied by some teaching in physiography or the sort of science that involves reading and exercise of the imagination while introducing examples of the chief laws of physics and chemistry. If this could all begin before a boy went to a public school, he would then be prepared for experimental science with some information upon which it can be based.

Now when we come to the systematic teaching at a public school, I feel that this should be from the outset experimental, and that the spirit of experimental inquiry should be cultivated as soon as it is possible to begin systematic instruction. All teachers owe an immense debt of gratitude to Prof. Armstrong for the manner in which he has urged this in season and out of season, until the ideas which he found such difficulty in forcing upon an unwilling public are now becoming accepted as commonplace, whether the word heuristic be used to describe the methods or not. But I think that a good deal of scientific information can well be absorbed by a child, and that the spirit of intelligent inquiry may be awakened before the learner begins systematically to weigh and to measure.

I suppose it is now becoming generally accepted that mensuration should be the beginning of the school scientific course, whether it be called physics or chemistry. On the historical principle this should in a general way lead through experimental mechanics to physics, and thence to chemistry. I would leave it to those who are actually concerned with the teaching of boys to develop details in their own way. As I have already said, I believe far too firmly in the individuality of the teacher to have any faith in a common method for all, but I do suggest that there ought to be some system to guide the teacher, and when any doubt arises concerning the order in which the ideas should be presented, then an appeal may with advantage be made to history.

In this connection it is obviously unwise, if not impossible, to teach chemistry and physics as two independent subjects, and it is satisfactory that elementary text-books of chemistry and physics are being superseded by what may be more properly called handbooks to experimental science.

Again, it would be an immense advantage if experimental science taught to all boys alike could proceed *pari passu* with their mathematics. By some minds the mathematics are most easily learnt through their applications, to others experiment appeals only as illustrating mathematical relations; to those who find little interest in either, each acquires a new meaning as illustrating the other; and to all alike it is an advantage that they should dovetail into one another. If mathematics and experimental science are to be an integral part of the education of all boys, there is every reason why they should be taught each with regard to the other. At present, mathematics and science are too often taught quite independently. To some boys, algebra and geometry only begin to have a meaning when they are regarded as expressing something tangible.

On such a question as when electricity and magnetism are to come in, I would prefer to hear the opinion of experienced teachers rather than attempt to dogmatise. History appears to suggest that they should come fairly early for purposes of information, but late in the systematic course of scientific training; that boys should become familiar with many electrical and magnetic effects before they begin to form part of their experimental course or are made the subject of measurement, and that then they should come after heat and light. I know that some teachers think that electricity should not be introduced at all until the tangent galvanometer can be understood and used, thinking that it is too mysterious if introduced earlier. But surely the mystery is the most potent inspiration of the spirit of inquiry, and every event of life must be a mystery when it first presents itself. The act of solution is as mysterious as the electric spark, and if it does not appear so it is only because it is more familiar.

I think there is a danger lest scientific training, too systematically confined, may lead to the very fault which experimental science is expected to avert—scientific dogmatism.

This brings me to the second part of my subject, namely, the order in which scientific ideas may best be presented to students *at the university*. Here, even more easily than at school, the teacher should be able to steer his course by the history of science, for it ought to be possible to carry on the scientific training as a whole, and not by one subject after another, even for a student who is only beginning science seriously for the first time at the university. For example, on the non-biological side, mathematics, physics, and chemistry, so far as they are required for the student's special course, could be dove-

tailed into it. The mathematics could be taught, not as a distinct subject, but in and through its scientific applications; the physics and chemistry could be adapted to the special need of the student according to the main subject which he is reading for his degree.

We waste far too much effort at the universities in giving elementary and preparatory instruction in a manner suitable only for schoolboys, and far too much time is spent in preparing for something that is never achieved. Scientific education at a university should be designed for students whose minds are formed, and they should be put as far as possible in the position of intelligent inquirers really approaching scientific problems with the desire for achievement. Here the spirit of research should absolutely dominate the teaching, and the ideas should be presented as they presented themselves to the original discoverer. The principle can be carried into effect in two ways in our teaching: in the first place, in lectures and didactic instruction the historical order can be followed in developing the subject, and in the second place, in laboratory work the experiments can be made with the same object and in the same spirit as those of the early discoverers.

Into every branch of experimental work it is easy to infuse quite a peculiar interest by letting the student do something which has not been done before, and allowing him to experience the excitement of the discoverer, to feel

"like some watcher of the skies
When a new planet swims into his ken."

For there is an excitement in the mere knowledge that no one in the world before has ever made the particular experiment on which you are engaged, or seen the particular thing which you are witnessing, even though it may possibly only lead to the same result as thousands of other similar observations. It is unfortunate that the real manner of many scientific discoveries is studiously kept out of sight, and the pupil is taught to believe that they are only made by a sternly inductive process in which each experiment is designed to preserve the logical sequence. How often in reality it was only a chance observation made during a search for something quite different which led to a discovery. This does not in the least detract from the credit of the discoverer, for if it had not been made by the man with a quick enough eye to see and with a keen enough intelligence to understand, there would have been no discovery. But in most instances the new fact came to light because some new experiment was being tried or some new observation was being made. There is no reason why every student should not learn this lesson from the history of science and feel that he too is doing something new and is on the verge of discovery. There is a pretty close relationship between the sporting instinct and the zeal for scientific research. Half the value of science as a mental training is due to the knowledge that it is always advancing—and the spirit of restless inquiry, if stimulated, supplies just the enthusiasm required. I can see no reason why a pupil should not be set to do a new thing rather than an old whenever it is possible. There is no better harmony of teacher and pupil than that the one should make a new observation and the other help him to interpret it.

The New Matriculation Light. By R. W. Stewart. 282 pp. (Clive.) 2*s.* 6*d.*—This volume, which is based upon the same author's "Text-book of Light," contains a thorough elementary treatment of geometrical optics. Numerous simple experiments are described, and a large number of diagrams are included.

THE FUNCTION OF THE SCHOOL OF ART.[1]

By SIR CHARLES BRUCE, G.C.M.G.

A VARIED experience has forced me to the conclusion that in education unity of end can only be attained by variety of means. A definition is always difficult and elusive of grasp, but I venture to define the end of education by adopting a phrase of Mr. Gladstone's, and I submit to you that it is to find for every man on God's earth a useful, an appropriate, and an honourable place. It is my desire to explain very briefly the part and function assigned to the schools of art in the United Kingdom in the accomplishment of this purpose. Schools of art have not been long established in this country, and there is still perhaps some misunderstanding as to the scope of their work. It seems to be thought by many that their function is to teach picture-drawing, and that picture-drawing is merely an amiable pastime that has little or no direct bearing on the practical concerns of popular life. Now I conceive that the real function of our schools of art is to apply the highest possible standard of culture and knowledge to the practice of industry and commerce in respect of articles of manufacture that enter into the primary and constant use of every family.

A single example may serve as an illustration. I have in my mind a school of art in a Midland county with about 1,500 students, of whom six only are studying for the profession of picture painters in the popular sense. The rest represent no less than eighty different trades and occupations, and they are learning how to bring to bear on each of these occupations the highest standard of intelligence in the application of art to practical uses. A little reflection will easily convince you that there are few branches of industrial and commercial activity which do not largely depend on the successful application of art to trade uses. If we enter the Army and Navy Stores, or the stores of the universal providers, such as Whiteley's or Harrod's, a glance will show us that there is scarcely an article which does not illustrate the application of art to domestic uses. Their supplies may be divided generally under three heads: house, dress, and diet. Under the head of house are included wall-papers, carpets, the furniture of sitting-rooms and bedrooms, the furniture of the table in metal, pottery, and glass, and the thousand little ornaments which contribute to the pleasures of home. Under the head of dress, I will not assign too much importance to the clothes of a man, but it will be admitted that in the apparel of a woman the application of art to the arrangement of form and colour is of paramount importance. Form and colour are the elements of natural beauty, and are no less essential in its decoration. So that the area of industry interested in the application of art to house and dress includes architects, builders, machine-makers, carpenters, the pottery and glass trades, tailors, dressmakers, milliners, and a whole host of people engaged in subsidiary employment.

In regard to articles of diet, it may be thought that these, at all events, lie outside of the area of activity of students in schools of art. But that is a mistake. It becomes daily more evident that the sale of many articles of diet that enter into the consumption of nearly every family in the United Kingdom, such, for example, as confectionery and chocolate, is largely affected by an appropriate and attractive decoration of the package. And this naturally suggests the extensive area of activity

[1] From an address delivered to the students of the Southend School of Art.

offered by the application of art to the purposes of advertisement. There are conscientious objectors to the use of advertisement in any form, but even these must find some consolation in the certainty that schools of art will exercise an influence in elevating this subsidiary branch of industry to a higher plane than it has hitherto reached.

I have had in mind, so far, only the wants of the United Kingdom, but I must remind you that the area of activity within which art may be applied to domestic uses is expanding every day over an empire which now covers one-fifth of the habitable globe. This expansion includes every branch of industry to which reference has been made, but I will take as illustration a single example.

You are aware, no doubt, of the great enterprise recently undertaken by the British Cotton Growing Association. The cotton industry has advanced with rapid strides during the last few years, and perhaps no industry has before it a vaster domain for the application of art to domestic uses. I will indicate only a single area quite recently brought into the sphere of operation, and still little familiar to the people of this country—the area of equatorial Africa. Equatorial Africa presents, not only a vast field for the production of the raw material, but a practically unlimited market for the manufactured product. As civilisation is advancing, the natives are learning to clothe themselves, and to substitute for the primitive devices of decorating the body by tattooing, or with the spoils of the chase or with metal circlets, a fashion of dress somewhat analogous to the fashions of Asia. If you should have an opportunity of visiting the Imperial Institute in London, you will be astonished at the work which is being carried on in the adaptation of cotton fabrics to varieties of climate and an infinite variety of popular taste.

I have observed that it is a function of the schools of art to find for the workers in their area an appropriate place. A hundred years ago the French Revolution and the American Declaration of Independence commenced a new era in the struggle for existence, and laid down the rules of the game on the principle that all men are born free and equal. There is, of course, much truth in the declaration, but a century of struggle under the new rules has made it clear that under the influence of environment and heredity all men are not born with the same or equal aptitudes for the struggle. Rather they are born with an infinite variety of aptitudes, and all experience proves that success is for those whose special aptitudes are perfected by training for specially appropriate work. Now if we take again the case of the art school to which I have referred with 1,500 students, and consider the variety of their aptitudes and the variety of opportunity presented by eighty or more trades and occupations, we shall easily appreciate the importance of the trust and function committed to the headmaster and his assistants. They have to ascertain the aptitudes of every individual student, and, mind you, this cannot be done by collective examination, by question and answer in accordance with the ordinary methods of competitive examination. To ascertain the aptitudes of individual students for the application of art to special trades and occupations, and to develop and guide their aptitudes in the necessary direction, is a task requiring evidently faculties of a very high order. And yet it is only by the successful exercise of the trust committed to them that schools of art can accomplish their own appropriate purpose, and supply the industries upon which the prosperity of the country depends with a constant supply of recruits trained to bring to bear on special exigencies special aptitudes educated to a high standard of knowledge and culture.

For it is obvious that in proportion to the measure of efficiency of the headmaster and the staff of our art schools will be the measure of advantage they confer on the students who are to become soldiers in the army of industry; on the army itself, in which they will be qualified to hold appointments of every grade; and on the country which the army of industry is to defend in the struggle of the nations for commercial supremacy.

Mr. Haldane, before he became War Minister and devoted his attention to the organisation of our military forces, had given much thought and study to the organisation of our industrial forces, and he came to the conclusion that only by a co-ordinated system of education, in which every link should bear its share of the strain, could this country hold its place in the international struggle. I commend to your study his book on "Education and Empire." He emphasised the necessity of linking together the stages of technical education—primary, secondary, and tertiary—and of recognising the importance of the elementary and preliminary stages, in which the work actually done is not always easily appreciated in respect of its influence on the final result. This is particularly necessary in the case of art schools.

In any co-ordinated system of national education, the school of art must be considered as a link on the strength of which the safety of the whole chain will depend, and it is not necessary for me to labour the point that it is a purpose of the art school to find an honourable position in life for all who come within its influence. This will follow of itself in the measure of the efficiency with which the school has discharged the trust and function committed to it. But I should like to say one word on the status of the art school in the hierarchy of the educational agencies of the country. I venture to urge that there should be assigned to our technical schools, alike in the departments of science and art, a status equal to that which custom has assigned to our ancient seats of learning, and Germany has assigned to her technical high schools. Mr. Haldane, in the little work I have alluded to, indicated how this might be done. He argued that if the work of the technical schools is to be effective, the dominant influence in secular education must be transferred from the Church, which controlled the ancient seats of learning, to the university. And the modern universities, some of which have been established since he wrote, are all working in this direction. Time, of course, will be required for such a scheme as is contemplated to be organised completely. But there seems to be no reason to delay a substantial improvement in the status of the staff of the schools of art.

Three things seem urgently required: an emolument adequate to enable the members of the staff to live in sober comfort and decent freedom from pecuniary embarrassment; security of tenure; and a larger freedom of discretion. A status of superior dignity will follow as a logical consequence.

I should like to say a word of encouragement to you who are qualifying yourselves for the honourable career you have chosen. The study of form and colour—the alpha and omega of your profession—must bring you, if you are to succeed, into close and constant communion with nature. In the humblest flower of the field, in the trees of the forest, in the curling waves of the ocean, in the rainbow and in the sunset, you will learn the secrets of nature, and possess yourselves of a spirit that will

influence your own work and which it will be yours to bring into the service of humanity.

In this communion with nature you will find the secret of things that give to life its colour, to the sense of duty its highest and noblest incentive; things that are not only the ornament and stay of superior fortunes, but have a charm to console and even to illumine the ungenial season of adversity.

THE STUDY OF HISTORY.[1]

THE Education Department of Scotland has adopted the policy of leaving a large latitude to the schools under its jurisdiction in matters of organisation, curriculum, and method. But, while leaving them free, it offers them guidance, and at the present time is engaged in preparing a series of "Memoranda on the Teaching of Various School Subjects," which are certain to prove of high value, not only to the teachers for whom they are primarily intended, but also to teachers generally throughout the United Kingdom. The present memorandum is the fifth of this useful series, those previously issued having dealt in turn with English, arithmetic, language, and drawing.

The subject of the teaching of history is opened by a brief but luminous discussion of the object of historical study; then, by a natural transition, the memorandum passes on to consider what portions of history are best calculated to achieve that object; finally, methods are dealt with. In the view of the writer of the memorandum, history in the early stages of a child's school life can best be employed if it is used to awaken an interest in ages other than the present, and to inculcate a few important moral lessons. In the later stages of educational progress, when systematic study has succeeded uncritical browsing among fables, legends, and half-truths, history may be made to develop the mental power of tracing connection between cause and effect, may be used to impart an intelligent interest in current political movements, and may be employed to train the judgment.

The general spirit and style of this memorandum may be gathered from the closing passage, which runs as follows:

"There are two main sides to historical study in schools. There is first that aspect which is most fully exemplified in the preparatory stage, the making acquaintance—for the most part in literary form and as part of the study of literature—with the materials of history. This side of the study of history does not come to an end with the preparatory stage. On the contrary, a large part of the literature read by the pupil at subsequent stages will still have to do with historical events, and should be so handled as to enrich the pupil's conception of the relative period of history, its chronological and other relations to the leading events of the period being sufficiently studied. On this side of the work the teacher will have to consider carefully what use can be made of the historical novel, particularly in the intermediate and secondary school or in the supplementary course of the primary school. He will have to weigh the advantages accruing from the novelist's vivid pictures of manners and interesting portrayal of character against the danger of false and misleading impressions due to the novelist's free handling of incidents and personalities. It may be the duty of the teacher of history to correct impressions communicated by Shakespeare and Sir Walter Scott. Yet even this may prove a valuable lesson, when the correction is made intelligently and not dogmatically, when the pupil is shown that a statement is necessarily wrong because it involves an obvious anachronism; or when the correction is made sympathetically, and it is pointed out that although this or that statement of fact be erroneous, the general spirit of the narrative is true to history; or again, when the correction is made to convey a lesson in fairness, when the injustice done to some individual or class is patiently and clearly made plain and the sympathies of the pupil readjusted.

"The other side is the systematic treatment of history so as to exhibit events in their due proportion and proper connection, with the view of approximating more and more closely, as the study progresses, to an adequate comprehension of the general movement of history. This work will make the very highest demands upon the teacher's powers, and it cannot be undertaken with any hope of success without careful preparation on his part before each lesson. It is here that his personality will come in. The view of history which he presents to his pupils must bear the stamp of his own individuality; it must be that aspect of events which presents itself to him after careful and well-considered reading. In the light of the intimate bearing that instruction so given may have upon the pupils' attitude towards current problems of vital interest, it is clear that the duty of imparting it must be undertaken under a deep sense of responsibility. But that responsibility is the teacher's highest privilege, and to shrink from it is to fail in a true conception of the teacher's office. It follows from what has been said that the instruction must be oral. The teacher must give of himself, of the fruits of his own individual study and reflection. For this no text-book will ever be a sufficient substitute.

"If the teaching of history be conducted on the lines suggested in the present memorandum, there are four things to which it may always be made to conduce, in different degrees at different stages—an interest in the life of the past, a training in the laws of evidence, a philosophic understanding of the development of human civilisation, and last, but not least, a clarified moral sense and the acquisition of a spirit of justice and charity in passing judgment on human nature whether in nations, in parties, or in individuals. Compared with these, the mere accumulation of a knowledge of historical facts is a matter of quite secondary importance, while the attempt by dint of incessant repetition to impress upon the memory for future use the leading facts of a limited portion of the field may in these days of abundant means of reference be justly condemned as an anachronism, even if it were not doomed to failure in all but exceptional cases."

[1] "Memorandum on the Study of History." Prepared by the Scotch Education Department. (Wyman. Cd. 3843.) 1½d.

HISTORY AND CURRENT EVENTS.

THE dispute which has now happily terminated in the Transvaal concerning the registration of natives of India is a typical example of British political methods. The Empire is so large that it is impossible to govern it from Westminster. Therefore, wherever it is possible, large powers of self-control are given to "colonies." So large, indeed, that some of them—*e.g.*, Canada—can make commercial treaties with foreign Powers, as France. The power reserved to the Crown, *i.e.*, to the Cabinet in England, to refuse assent to Bills passed by local legislatures is rarely used, though the action of the Cabinet in such matters, like all else they do, is subject to criticism in the Brito-Irish Houses of Parliament. The Transvaal, a colony in which men of Brito-Irish nationality have to share political power with the descendants of Dutch and

French Protestants who were lately in arms against us, passed a law which grievously offended the natives of India, and that at a time when it behoved the Empire as a whole to be chary in doing anything which would add fuel to the anti-British agitation in the peninsula. Yet such is our belief in local self-government that nothing was done by the central authorities to hinder the Transvaal folk in their action.

Note, too, the peculiarly British method of conducting the controversy in the Transvaal. The natives of India disliked the Registration law, or at least some parts of it. They therefore agreed together, formed an association to defy the law, and were punished for their disobedience by imprisonment. They were treated in the same way as if they had broken a law which merely enforces the universal moral code, such as laws against theft or fraud. But beneath this outward show of contest there is on both sides an appreciation of the fact that it is not a question of obvious morality, but a question of political expediency that is being debated. Accordingly, alongside of the war, for so we may term it with a slight extension of the meaning of words, there is negotiation. And the result at last is a compromise. If the prisoners are released, if the objectionable features of the law are not pressed, the leaders of the "rebels" will guarantee a "voluntary" obedience to the presumably "reasonable" requirements on the part of their followers. All this is brought about by negotiation between the parties to the strife, both at home and in the colony. While it is possible so to conduct what are almost international disputes, we need not despair of our Empire.

History, the study of politics, knows religions mainly as occasions of strife. Whether they be religions claiming a supernatural origin, as Judaism, Christianity, or Mohammedanism, or whether they be such mundane affairs as are embodiments of human ideals, they aim at conquest. While they proceed by the "foolishness of preaching" only, they may be ignored by history, because they do not affect States either internally or externally, or at any rate do so only in a very indirect way. But when such an inspiration as claims for itself the name of religion uses forces of persuasion either to "peaceful" political action or to the actual use of armed force, history must take note of them, and only, as we have said, as occasions of strife. Lala Lajpat Rai presided in January over an All-India Swadeshi Conference, and said, *inter alia*, "Mine is a religion of hope and faith. I believe in struggling, a righteous, stern, and unyielding struggle." He omitted to mention "love," the "greatest of these," but that was only because it was unnecessary at the moment. He loves those of his own faith and hope. His movement is a religion. Whether "true" or "false" depends on the point of view.

We used to think trial by jury the palladium of British liberties. We used to imagine that it fell down from heaven, somewhere about the time that Britain first arose from out the azure waves, with the special object of preventing Britons from ever being slaves. Or, if we were not so mythological, we used to think it was inaugurated by those who drew up Magna Carta, and who required that every free man should be tried by his peers. But we are now wiser and sadder than when heaven lay about us in our infancy. We have learnt that it was a device of our Norman conquerors, used at first for anything but criminal trials, and applied only for that purpose when the Lateran Council of 1215 and our suzerain Innocent III. forbade us to use ordeals. And now, on the authority of our Irish Secretary, we learn that "juries are useful (only) because they are the means through which the Executive can learn what the feelings of the people are." They are not, in Ireland at any rate, a means of arriving at a true verdict on the case before the judge.

ITEMS OF INTEREST.

GENERAL.

The meeting of the British Association will be held in Dublin next September. The president of the section of educational science will be Prof. L. C. Miall, F.R.S., formerly professor of biology in the University of Leeds.

There has been a growing conviction in many quarters that the system of education adopted in secondary schools for girls has partaken too much of the character of the traditional course of work in boys' schools. The requirements of the home have, it has been felt, taken too small a part in the lessons provided. An interesting scheme designed to prepare girls better for domestic duties was described in an influentially signed letter recently published in the *Times*. The letter rightly pointed out that the first requirement, if instruction of the kind proposed is to be given successfully, is to prepare teachers for the work. It is intended to provide in London, and subsequently in great provincial centres of population, suitable courses of post-graduate instruction in household economics. Such a course will be given in London at the women's department of King's College, and will begin next October. A college board, consisting mainly of the professors of the subjects germane to the course, with Prof. Smithells, F.R.S., acting as honorary adviser, will control the educational side of the work. Donations are asked for in order to raise £3,000, the sum necessary for the effective organisation of the scheme, and may be sent to Miss Soltau, King's College (Women's Department), 13, Kensington Square, W. It is earnestly to be hoped that the money required will be forthcoming, for the proposed experiment should lead to most beneficial results in assimilating the work of girls' schools to the needs of the home.

A Secondary Schools Association has been formed the object of which is stated to be to safeguard the interests of secondary education. The new association proposes to promote an interchange of experience among governors of secondary schools, to give advice to members of governing bodies as to the decisions of the Board of Education and to members of local education authorities on the Board's schemes for secondary schools, to communicate with the Board and education authorities in the interests of secondary education, to obtain alterations which seem desirable in the Board's schemes for secondary schools, and to take Parliamentary action when necessary. The newly appointed executive committee includes many well-known educational experts and administrators. Sir Philip Magnus has been elected chairman for the ensuing year, Sir William Chance treasurer, and Canon Rawnsley honorary secretary.

At the recent meeting when the inauguration of the association was effected, numerous resolutions were adopted. One recommendation asked the President of the Board of Education to give sufficient notice of any changes of a serious character in the Regulations for Secondary Schools so as to afford opportunities for the discussion of such changes while they are still in a provisional form. Another called for the withdrawal of the regulation

whereby no grants will be payable to any secondary school which may hereafter be established unless it is recognised as a pupil-teachers' centre. A third asked the Board, in administering the regulation fixing the proportion of the free admissions to secondary schools from elementary schools, to relax the requirement of 25 per cent. in all cases where the educational needs of the school require it. A fourth demanded that schools belonging to a company which are carried on for public purposes and not for profit (except that in some cases they pay a limited rate of interest on their capital expenditure) should not, so long as they are educationally efficient, be excluded from State grants on the ground that they are conducted for private profit. As indicative of the increased interest in secondary education shown by educated men, we welcome the formation of the society. We trust that its activities will be directed wholly to secure educational efficiency, and that no other considerations will be given weight in its deliberations. The office of the association is at 25, Victoria Street, Westminster.

THE annual report for 1907 of the Moral Instruction League—the object of which is to introduce systematic non-theological moral instruction into all schools, and to make the formation of character the chief aim of school life—shows that steady progress has been made in acquainting education committees throughout the country with the work of the league. The report points out that during the year under review provision for systematic moral instruction has been made in Devonshire, Buckinghamshire, Chester, Swansea, and Swindon. The number of education authorities which have now provision for this instruction in their schools is thirty-nine. These include ten counties, twenty-two boroughs, and seven urban districts. There are, in addition, some fifteen education authorities which provide for more or less systematic moral instruction in connection with the Scripture lessons. Teachers in sympathy with the kind of teaching advocated by the league should procure copies of the publications enumerated in the report and study at first hand the type of lessons suggested as suitable for school purposes. Full particulars as to the work of the league can be obtained from the secretary, Mr. Harrold Johnson, 6, York Buildings, Adelphi, London, W.C.

THE annual meeting of the Moral Instruction League took place on February 10th, Sir Edward H. Busk presiding, when an address was delivered by Prof. J. S. Mackenzie on "The Problem of Moral Instruction." Prof. Mackenzie, in the course of his address, directed special attention to two main difficulties that are felt in connection with giving systematic moral instruction in schools. The first difficulty is the conflicting moral ideals that prevail in the community. Some authorities urge that it would be well to distinguish between the good citizen and the good man, and to confine efforts in moral instruction mainly to the development of the former. Others urge similarly that there should be a recognition of the common elements in divergent ideals, and that endeavours should be made to limit instruction to these: that in any case a serious attempt should be made to discover an underlying unity in the ideals that seem to conflict. The second difficulty is that of finding suitable teachers to give efficiently such important instruction. This difficulty was not created by the introduction of moral instruction into the curricula of schools, however, but has only thus been brought to light, and it is imperative that this difficulty should be met by devoting greater care to the training of teachers to fit them for this function as character builders in the school.

WE have already directed the attention of teachers (vol. ix., p. 392) to the forthcoming International Congress for the Development of Drawing and Art Teaching to be held in London next August. A meeting was held on February 12th at the Mansion House, London, in support of the congress. Prof. Beresford Pite made an explanatory statement, in which he said that the first international congress was held in Paris in 1900, in connection with the great exhibition, and the second at Berne in 1904. The congress gathers together representatives interested in the teaching of drawing from all the nations of the civilised world. Twenty-two nations were separately represented by delegates at the congress at Berne, and that number has grown in view of the congress in London. The number of members attending at Berne was some 800, and there is certain to be a larger attendance in London next August. A large committee has been formed, called the British committee, for the purpose of associating together teachers of drawing with a view to the preparation of the work and programme of the congress. A great exhibition is to be held in connection with the congress in August, designed to show the methods and aims of those engaged in teaching drawing. The following resolutions were adopted: "That it is desirable that the third International Congress for the Development of Drawing and Art Teaching and their Application to Industries should be received in London in a manner worthy of the traditional reputation of Great Britain for hospitality and international courtesy." "That as the revenues of the State cannot be applied for this purpose, application should be made to local authorities, public bodies, and private citizens to provide such funds as are requisite."

THE prizes and certificates awarded by the National Society of French Masters in England at its twenty-third annual competition last year were distributed on February 3rd. The Sèvres vases given by the President of the French Republic were awarded to the Ladies' College, Cheltenham, and the Royal Military Academy, Woolwich. The gold medals given by the French Minister of Public Instruction were presented to N. C. Flecker, Ladies' College, Cheltenham, and E. G. Croker Poole, Rugby School. The silver medal given by the French Ambassador in London was gained by A. Holmes-Scott, Royal Military Academy; the silver medal given by the French Ambassador in Rome by A. V. Gompertz, Royal Military Academy. In the competition of L'Entente Cordiale (Anglo-French Society) for *bourses de voyage*, of the value of £20 each, A. Horrocks, Victoria University, Manchester, and D. J. Lewis, University College of Wales, were successful; and in the same society's competition for *bourses de voyage* of the value of £10 each, F. D. Lean, Central Foundation School, Spital Square, E., and A. F. Miller, Parmiter's School, were successful.

THE lectures for teachers of geography arranged by the Geographical Association, to which we have before directed attention, are proving very successful. From the large audiences of teachers which have been secured, it is quite clear that much interest is now being taken in methods of teaching geography. On March 13th Prof. L. W. Lyde will lecture on how to teach the geography of a country, and on March 27th Dr. Herbertson will deal with orographical maps as the basis of the geography lesson. The lectures are held at University College at 8 p.m., and particulars as to admission can be obtained from Mr. J. F. Unstead, 5, Wiverton Road, Sydenham, S.E.

THE Institute of Hygiene, of which Sir William Bennett, K.C.V.O., is president, has decided to hold examina-

tions in personal and domestic hygiene, and has issued syllabuses of the subjects which should be studied by candidates. The institute proposes to award certificates and diplomas. Any movement which is intended to secure the better equipment of teachers for the important work of giving instruction in the laws of health deserves encouragement, but we have doubts as to the wisdom of multiplying examinations. Full particulars and forms of application may be obtained on application to the secretary, Incorporated Institute of Hygiene, 34, Devonshire Street, Harley Street, London, W.

During the past few years a great development has taken place in secondary education in New Zealand. The secondary schools of the Dominion are divided into two classes: secondary schools pure and simple, and district high schools. The former have been established in each case by a special Act of Parliament, and confine their operations entirely to the teaching of secondary-school subjects. The latter are an extension of the primary school. What is known as the district high-school class consists of pupils who have passed Standard VI. No fees are payable by pupils who have passed this standard with sufficiently high marks. A special assistant is appointed to teach this class. Such a district high school may be established in any school where an average attendance of twelve duly qualified pupils is guaranteed. Other pupils may attend the district high-school class on payment of a small fee. The tenure of a free place is, in the first instance, for two years. At the end of that time pupils wishing for an extension of the period are required to pass an examination conducted by the Education Department. This examination, known as the Senior Free-place examination, entitles a pupil to receive free tuition until the age of nineteen years is reached. The pupils of the district high schools are usually prepared for the Junior Civil Service examination or for the Matriculation examination of the New Zealand University.

During the year 1906 the Senate of the University of New Zealand secured the passing of a Bill by the Colonial Parliament to authorise the extension of the charter in order to allow several fresh degrees to be conferred. The Privy Council, on being applied to, refused to give its sanction to the proposals of the Senate. At the last meeting of the Senate the matter was thoroughly discussed, with the result that it seems quite likely that the new degrees will be established notwithstanding the attitude of the Privy Council. The new degrees proposed are those in pedagogy, agriculture, veterinary subjects, &c. The visit of Prof. Starr Jordan, of the Leland Stanford University, California, will strengthen the Senate in its resolution to proceed in the matter. The Colonial Parliament refused to sanction the granting of degrees in divinity, no doubt in conformity with the New Zealand system of free, compulsory, and secular education. The Senate has shown itself to be progressive, however, by formulating a scheme for local examinations in music to take the place of those at present held by the Associated Board and by Trinity College, London. Further than this, the Senate has very favourably considered the establishment, in one of the constituent colleges of the University, of a chair in domestic economy (to be filled by a lady). A well-known settler (an Oxford graduate, by the way) has offered to endow the chair.

The recently published volume (Cd. 3886) of statistics prepared by the Board of Education, and dealing with the years 1905–6–7, provides much interesting information as to the work of schools and colleges in England and Wales assisted by the Board. In secondary schools receiving Government grants, there were 65,994 boys and 49,094 girls during the school year 1905–6, and grants were paid on 66,014 pupils in all. In forms below those taking an approved course, there were 19,948 boys and 14,187 girls; in forms taking an approved course, 43,946 boys and 32,825 girls; and in forms above those taking an approved course, 2,100 boys and 2,682 girls. The amount of the grant paid to secondary schools reached £292,716, of which £46,495 was on account of pupil-teacher centres attached to secondary schools. Speaking generally, it may be said that the number of boys or girls attending during the fourth year of the approved course is about 20 per cent. only of the number registered for the first year, and there is a steady decrease in numbers after the end of the first year's work.

The Modern Languages Holiday Courses arranged by the Teachers' Guild will commence at Tours and Honfleur on the morning of August 3rd, and at Neuwied on the morning of August 5th. At Santander the students should arrive before August 5th. The courses will occupy not less than three weeks in any centre. Students are advised, when possible, to stay a short while longer in the country. It is about the end of the third week that consciousness of progress begins to be felt. Some further practice after this stage is reached is very valuable. The courses are open equally to members of the Guild and to other persons. All instruction is given in French, German, and Spanish respectively. To derive benefit from the courses, students should have already some knowledge of the written language at least. The representatives of the English committee in 1908 are: at Honfleur, Mr. J. V. Saunders, Hymers College, Hull; at Neuwied, Mr. E. Sharwood Smith, The Grammar School, Newbury; to whom (according to the centre chosen) intending students should send their names as early as possible. At Tours, the representative has not yet been appointed. Students for Tours should send their names to the offices of the Teachers' Guild. At Santander, Señor Don Julian Fresnedo de la Calzada, Santander, and Mr. S. Beirne, Astillero, Province of Santander, will represent the Guild. Entries for the Spanish course should be made at the offices of the Guild, 74, Gower Street, London, W.C.

The School Nature Study Union, the president of which is Sir George Kekewich, has sent us copies of a series of seven helpful leaflets prepared to assist teachers and others interested in encouraging observations of natural objects and phenomena. Among the subjects of the leaflets are seeds and seedlings, sundials, bulbs, rocks, and tree twigs in winter. There is also a classified list of books on nature-study, but this needs editing in order to secure uniformity in the printing of names of authors. Sometimes initials are given and in other cases they are absent. Sir Robert Ball is given his title, but Sir Norman Lockyer appears as N. Lockyer. Prof. L. C. Miall appears as Prof. Miall and as L. C. Miall, while Prof. E. B. Poulton is reduced to Poulton. Also, R. Lydekker is printed Lyddeker, and Prof. J. A. Thomson appears in one case as A. J. Thomson. Moreover, we notice that one widely used and practicable book on nature-study is omitted from the list. The union is, however, doing good work, and deserves to be well supported. Particulars of its leaflets, and of other ways by which it promotes interest in Nature, may be obtained from one of the secretaries, Mr. H. E. Turner, 1, Grosvenor Park, Camberwell, London, S.E.

The recent class-lists for the Cambridge Local examinations show that the total number of candidates entered

for the examinations last December was 13,038, exclusive of 2,544 candidates examined at Colonial centres. In the senior examination, 981 boys and 1,313 girls passed, 116 boys and 9 girls being placed in the first class. Of the junior candidates, 2,407 boys and 1,685 girls passed, the numbers placed in the first class being 262 and 43 respectively. In the preliminary examination, 1,584 boys and 1,171 girls satisfied the examiners.

THE governing body of the Imperial College of Science and Technology has appointed as Rector of the Imperial College Dr. H. T. Bovey, F.R.S., dean of the faculty of applied science and professor of civil engineering at McGill University, Montreal, and honorary fellow of Queen's College, Cambridge.

THE headquarters of the National Home-Reading Union have been removed from Surrey House, Victoria Embankment, to larger offices overlooking the Embankment Gardens, at 12, York Buildings, Adelphi, London, W.C.

SCOTTISH.

THE first congress of the secondary-school teachers of Scotland was held in Glasgow University on February 8th. Principal MacAlister, in welcoming the members of the congress, expressed the hope that the meetings would be fraught with pleasure and profit to themselves and with advantage to the cause they represented. Nothing but good can come, he said, from the intercourse between members of the great profession of education, whether they exercise their functions in the schoolroom or in the professorial class-room of the university. Sir William Macewen, the distinguished surgeon, then addressed the members on "Some Glimpses into the Structure and Functions of the Brain, with Reference to Education." Sir William, after an interesting explanation of the brain structure by means of models and diagrams, took up the question of brain function. In this connection he emphasised the fact that the brain is developed according as the whole body is developed. The training of the eye, the ear, the hand, and all the other senses is necessary, and the wider the culture of these avenues of knowledge the greater becomes the harmonious development of the brain. Further, it is essential that this sense training should be given at the right evolutional stage in the pupil's life. If left over too long, the training fails of its full effect, and the brain remains dwarfed and stunted in that direction. Other papers of great interest were given by Prof. Medley on "The Teaching of History," and by Prof. J. W. Gregory, F.R.S., on "The Aims and Methods of Geography Teaching." Mr. Charles S. Dougall, The Institution, Dollar, presided over the proceedings.

SCHOOL boards in the past have shown little enterprise in educational policy. They have been largely content to take their ideas and their instructions from the Department, which has been prodigal enough of both on the side of quantity at least. Edinburgh School Board, however, promises to bring to an end this tradition. Reference was made a few months ago to the remarkable success that had attended its efforts to bring the knowledge of the continuation classes under the notice of employers and employees. The Board is now seriously considering a scheme under which pupils leaving school can be advised and guided in regard to the employment they should follow. The credit for originating the scheme belongs to Mrs. Ogilvie Gordon, but the Edinburgh School Board deserves every commendation for so favourably regarding a scheme not initiated by itself. The Board has called for an early date a conference on the subject, when it will meet delegates from the town and parish councils and the teachers' associations. The conference will at the same time consider whether something cannot be done to revive or remodel the apprenticeship system which has so entirely broken down under existing conditions.

MRS. HUMPHRY WARD addressed a largely attended and representative meeting in Edinburgh on the subject of "Play Centres for Children." She explained that the movement is an attempt to get out of the costly buildings and playgrounds which represent the educational plant of the nation a fuller and more exhaustive return than at present by utilising them to keep children off the streets and back courts in the evenings. After Mrs. Ward's address, a resolution was moved by Mr. John Gulland, M.P., approving of the principle of the play centres, and of securing open spaces in the poorer districts of the city for playgrounds and gardens.

THE women graduates whose claim for a vote in the election of university members of Parliament was recently rejected by the Court of Session have resolved to appeal to the House of Lords. They base their claim on the following grounds: (i) Women are not expressly excluded by statute from voting at Parliamentary elections; (ii) the enactments which regulate the election of Scottish university representatives are different from those that regulate any other Parliamentary election. In particular, in the section of the Act enfranchising Scottish graduates, the word "person" is used, in contradistinction to the word "man" in other enfranchising Acts.

THE Education Department has voluntarily determined on a policy of devolution. Much of the business now transacted in Dover House is to be transferred to Edinburgh, where suitable quarters are being prepared. The new headquarters will be under the charge of one of the assistant secretaries of the Department, and will provide accommodation, not only for the Department's accountant and actuaries, but for a considerable portion of the London clerical staff.

THE secondary-school teachers of Scotland are to be congratulated on the possession, for the first time, of an educational journal of their own. The *Secondary School Journal*, as the new magazine is called, has made an excellent beginning, and should have a bright future before it if the promise of the first number is fulfilled. The *Journal* opens, appropriately enough, with an eloquent and powerful appeal for solidarity among all engaged in the work of secondary education. Teachers in the past have failed to utilise to the utmost the power and the influence that they might possess by combined action, and in consequence have lost many of their former rights and privileges. One of the primary aims of the new magazine will be to further the co-operation of the various educational associations in defence of common interests and for the furtherance of common ideals and principles. Mr. John D. Rose, rector of Kirkaldy High School, puts the case against the "uniform course" of the Education Department with admirable effectiveness and point. The present policy of dead uniformity and barren symmetry cannot withstand many such attacks. The publishers of the *Journal* deserve credit for the attractive appearance of the first issue.

INTIMATION has just been made by Edinburgh University of its intention to confer the degree of LL.D. on Mr. Scougal, H.M. Senior Chief Inspector of Schools. The

news has been received by every section of the teaching profession with the utmost satisfaction. Holding office in a time of almost continual and momentous changes, Mr. Scougal by his tact, sympathy, and strong common sense has tempered the fury of the departmental wind to the shorn lambs of the teaching profession. Mr. Scougal is a man of high ideals and noble aims, with a broad outlook over the whole educational field. He has rendered great service to Scottish education in different directions. In particular, he has taken every opportunity to magnify the office of the teacher and to secure for him greatly improved conditions of service.

IRISH.

The King's Speech is distinguished this year, as last, by the promise of an Irish University Bill. The Bill, on which Mr. Birrell has staked his reputation as a statesman in Ireland, will, it is believed, be introduced early in the session. There has been some discussion in the papers, together with questions in Parliament, as to how far the speech which the Provost of Trinity College made last December in Manchester describes the Bill accurately. Mr. Birrell, while disclaiming any responsibility for the speech, has left it quite clear that his scheme will differ from Mr. Bryce's. He will not endeavour to include Trinity College in a new university, but will leave it in an independent and autonomous condition, and remodify the Royal so that it will become a teaching university. In other words, he will follow the recommendations of the Robertson Commission, and in order to carry these out will give fresh endowments to the Queen's Colleges and a new endowment to the Catholic University College in Stephen's Green. The sum of £30,000 a year is mentioned in the latter connection. The question remains whether Belfast will be given the status of a separate university or will still remain affiliated to the Royal.

Important questions, both of principle and of detail, will give rise to much discussion—*e.g.*, the position of women in the new university, the influence of clericalism, the relation of the colleges to the university and to one another. There are some who think that no Bill is necessary, and that the question would settle itself in a few years by those Catholic students who desire a university education going in ever-increasing numbers to Trinity College; others, like the Belfast Education Reform Association, think the new university, and especially the Queen's Colleges in Cork and Galway, will suffer from the introduction of a denominational atmosphere. Mr. Gray, again, a Senior Fellow of Trinity College, protests that no university Bill should be passed unless the Roman Catholic ban be taken off Trinity College, so that there should be equal and fair competition all round; and if Protestants are freely allowed to enter the new university, Roman Catholics should with the same freedom be allowed to enter the older one.

The year has opened with the inauguration of what promises to be a very successful Classical Association of Ireland. The first meeting of those who had promised to support it has been held to constitute the association and elect the council for 1908, and a public meeting has been held. At both meetings Mr. Justice Madden, Vice-Chancellor of Dublin University and Vice-Chairman of the Intermediate Board, presided, and at the public meeting stated that the formation of the association was welcomed by the Intermediate Board, which had already passed a resolution approving of its proposed objects and looking forward to its assistance in developing intermediate education in Ireland. The public meeting was remarkably successful, largely owing to a brilliant address by the first president, Mr. S. H. Butcher, M.P., who took for his subject classics as a training in interpretation, as a means for the better understanding of one another's minds in daily life. Latin and Greek are far enough separated from our own language to necessitate a constant effort of intelligence, and yet not too remote to be unconnected with it; in fact, our own language is in intimate relation with Latin and Greek, so that in studying them we are not carried into wholly alien mental surroundings. In reading them we seem to be in a far country, and then with sudden surprise we find we are at home. No languages are at once so ancient and so modern, so far and yet so near. By understanding them we begin to understand ourselves. The meeting was addressed also by leading representatives of different professions—Dr. Keene, Bishop of Meath; Dr. Delany, the President of University College; Sir Francis Cruise, M.D.; Mr. Justice Ross; and Rev. Andrew Murphy, Administrator of St. John's Cathedral, Limerick. For the purposes of practical work, the association has formed several committees, including an advisory committee, of which the assistant secretaries are Mr. Alton, Fellow of Trinity College, and Prof. Browne, of University College, to consider in what way classical teaching may be improved and made efficient.

In addition to the University Bill, Mr. Birrell has promised an increased grant for primary education for the improvement of the salaries of national teachers, but it is clear that he intends to do nothing this year for intermediate education. The Association of Intermediate and University Teachers has forwarded to him a long memorial dealing with the grievances of assistant teachers in intermediate schools, and has been referred by him to the Intermediate Board, which has never shown any interest in them. The memorial points out that the Intermediate Education Acts and the Board alike utterly ignore the assistant teacher. Teachers are at the entire mercy of managers; their salaries are inadequate, they are liable to dismissal without reason, and they have no pensions. There is no security for any portion of the school grant reaching them, and the association therefore asks for two things to be granted together, viz., inspection and a register of secondary-school teachers, leading to a living wage and old-age pensions.

The annual examinations of the Intermediate Board will begin this year on June 15th. There is one important change in the arrangement of the time-table, all the examinations held by the Department of Technical Instruction in science and drawing (for honour candidates only) being placed together at the end. The paper in English this year is for two hours, not two hours and a half.

WELSH.

Following upon the interview with Mr. McKenna recorded in the last issue of The School World, a conference has been held at Shrewsbury to consider the suggestion of Mr. McKenna that the Welsh secondary schools should be placed under the same conditions as the English secondary schools and should receive the same grants. There was a representative gathering of members of the county authorities. Although the meeting was private, some of the details have been published in the Press. One of the points which the Welsh schools have to consider is the bringing up of the number of free places in the schools to 25 per cent. of the total number of pupils. It is stated that if this were done, a borough

authority like Cardiff would still benefit by an additional grant, on the English basis, of £1,130 per annum, and a county authority like Denbighshire by £1,600. The total gain to the Welsh secondary schools by the acceptance of the English conditions of the Board of Education was put at £10,000, consisting of the grants for children between ten and twelve years of age—viz., £11,000—and the amount on attendances at £5,000. On the other hand, to bring up the free places to 25 per cent. would cost £5,000, so that the net gain is put at more than £10,000 per annum if the English conditions be accepted. The conference decided to recommend the acceptance of Mr. McKenna's suggestion, and a deputation was appointed to present the resolutions to Mr. McKenna. A further resolution was passed inviting each education authority in Wales to appoint three representatives to attend a conference to consider the advisability of forming a federation of the education authorities of Wales and Monmouthshire.

A DEPUTATION consisting of Sir Alfred Thomas, Mr. Herbert Roberts, Mr. William Jones, and Sir D. Brynmor Jones waited last month on Mr. McKenna to urge upon him the constitution of a National Council of Education for Wales. In reply, Mr. McKenna said if the Welsh members of Parliament would submit to him a scheme setting forth the leading principles upon which such a council should be constituted, and as to which there was general agreement in the Principality, he would consider it, and if the scheme should be so framed as to overcome practical difficulties and be likely to attain the objects aimed at, he would be happy to prepare and introduce a Bill to give effect to it. It was indicated that such a representative National Council would have oversight and control of all education in Wales (other than university education) subject to the control of Parliament.

MR. MCKENNA on the same occasion stated that the powers vested in the Central Welsh Board would not be interfered with, nor would the position of the Welsh Education Department be affected. Welsh autonomy would not suffer, and he would be able for the year 1907-8 to give to Welsh secondary schools by way of a bonus, as had been done in the past, a sum of money which would be equal to £5 per annum for each child during a four years' course—that was, children between twelve and sixteen years of age—so that Wales would immediately benefit by this arrangement to the extent of some thousands of pounds. Though all this was an important financial matter, the question of grants between the ages ten to twelve and sixteen to eighteen was financially a very small matter, but in future these grants would be given to Wales in the same way as they were given to England.

THE Barry Education Authority has decided to advertise for a medical man at £250 a year to devote such portion of his time as may be necessary (in conjunction with the medical officer of health of the borough) to perform the duties of school medical officer. In the estimates of expenditure for education of the Newport (Monmouthshire) committee for the year ending March 31st, 1909, are the sums £837 for the provision of meals to necessitous school children and £600 for medical inspection.

THE governors of the Barmouth County School have made a protest, on the report of the headmaster, against two of the text-books prescribed by the Central Welsh Board for the Honours Certificate in French, viz., those by Faguet and Rousseau. The following motions were carried unanimously: (i) That in our opinion these books are harmful in their tendency, the former because it deals with the Christian verities in such a manner as to prejudice the children's minds against them, and the latter because its moral tone is such as to render it totally unfit to be placed in the hands of school children; (ii) that an appeal be made to the Central Welsh Board to withdraw these books; (iii) failing this, that we appeal to the Merioneth Education Committee, when awarding county exhibitions, to see that the omission of these books on the part of candidates taking French will not prejudice their position on the list.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

The Sounds of Letters and their Illustration. By H. E. Haig Brown. 16 pp. (Charles and Dible.) 4*d.* net.—This is one of those little books which show most excellent intention and a sympathetic attitude towards children, but are vitiated by want of knowledge of what others have done. It is inconceivable that Mr. Haig Brown would have written these pages, "suggested for the use of teachers of infants," if he had been acquainted with other recent books on this subject; and his knowledge of phonetics may be estimated from such a statement as: "Formed by pursing the lips are the sound *j* and the kindred sound *ch* (soft, as in *church*)"; or as: "Formed by raising the tip of the tongue against the palate and rolling it are the liquids *l* and *r*."

O. Feuillet, Le Roman d'un Jeune Homme Pauvre. Edited by J. Laffitte. viii+180 pp. (Clarendon Press.) 2*s.*—The well-known novel is here presented in a very acceptable form, if we forget the binding which the publishers have thought fit to select for the "Oxford Modern French Series." The text is clearly printed, and the notes are thoroughly good. The English renderings are generally excellent, and the notes on the subject-matter are clear and to the point. The only misprints we have noticed are on p. 105 l. 13 and on p. 142 l. 1.

La Fontaine, Shorter Fables. Edited by A. H. Wall. 59 pp. (Blackie.) 6*d.*—This is a very well edited selection from the shorter fables of the great Frenchman. The notes are distinctly good, and the vocabulary appears to be complete. The note on the prosody might with advantage have been a little more full, considering the lamentable ignorance of the subject common in our schools.

Eckermann, Gespräche mit Goethe: Selections. Edited by R. F. Patterson. 40 pp. (Blackie.) 6*d.*—It is a bold enterprise to select so little from so many pages of profound interest. Mr. Patterson gives a very fair sample, which should lead many to turn to the complete "Gespräche," for which they will be amply repaid. The introductory note is satisfactory, and the notes are generally good. In *Lug and Trug* we have rhyme, not assonance (p. 35); in the note on Byron (p. 36) a reference might have been made to Euphorion in "Faust"; *after* has nothing to do with *aber*, as is implied by the note on p. 22 l. 30.

Hauff. Das Gespensterschiff. Edited by D. L. Savory. viii+81 pp. (Rivingtons.) 1*s.* 6*d.*—We are glad to see the first volume of Rivingtons' "Direct Method Elementary German Texts," for it contains such exercises as we believe likely to improve the pupils' knowledge; but we must utter a strong protest against the vocabulary,

however good it be. In an elementary book the presence of a vocabulary must be an obstacle to direct-method work. Mr. Savory gave us not long ago a First German Reader. His edition of "Das Gespensterschiff" shows an advance in several respects; but an obvious criticism still is that his text is too difficult, and many of his exercises are in comparison too easy. In other words, pupils for whom the exercises are suitable will find the text too hard. The vocabulary contains some 1,250 words, and the text only runs to 440 lines; this alone shows that Mr. Savory would have done well to simplify the text considerably. He has gone so far in his reverence of the text as to leave the obsolete *klimmten* in the text, and to put "jetzt: klommen" in a footnote. We are sure that Hauff would not have objected to some rewriting of his text, if that seemed likely to render it more acceptable to English readers. To Mr. Savory's conscientious work in the preparation of questions and exercises we gladly give our commendation.

Classics.

The Beginner's Book of Greek. By D. H. Marshall. 64 pp. (Arnold.) 1*s.* 6*d.*—This book so far goes on the right lines that the text is supposed to precede the grammar, which is given when it is supposed to be wanted, and the pupils are led to find it out partly for themselves; but it is one thing to have a true principle, another to carry it out properly, and this has not been done. To begin with, there seems to be a tacit assumption that the pupil has not yet learnt an inflected language; else why is the pace so slow? Latin is mentioned, true, but no account seems to have been taken of this in planning the book; for if it had been so, there are many ways of lightening the early stages. Again, the book approaches Greek from the point of view of the formal accidence, which makes it necessary to begin with the first declension and go through the others in order. The inevitable result is that the substance of the exercises is unnatural. Listen and be convinced: "The sea is beautiful; Helen hates the battle; In the fountain is a nymph; He is pleased by a shout; The young man gives a house to a liar; He sees a silver temple." When we come to Herodotus and his stories things are better; but it is a vital mistake to let the first impressions of the new language be stupid or far from the learner's experience. However, we take the book as a sign of grace; the author has begun to think, and he may go on.

Demosthenes, Orationes, II. i. The text edited by S. H. Butcher. xii+452+808 pp. (Scriptorum Classicorum Bibliotheca Oxoniensis.) Paper, 3*s.*; cloth, 3*s.* 6*d.*—This volume contains the Leptines, Meidias, Androtion, Aristocrates, Timocrates, and the two speeches against Aristogeiton. We have little to add to our criticism of the first volume, and we are grateful to have the text well printed on good paper, and with the critical notes at the foot of the page. No one who has used the Teubner text can have failed to notice how difficult it is to find out what is the reading of the MSS., and how often the reader puzzles his brains over a phrase which he afterwards finds to have been born in some Teutonic mind. If Mr. Butcher does not solve all our difficulties, he at least lets us know what the difficulties really are, and in so far puts us in a better position to solve them for ourselves. This will doubtless supersede the German text.

ANOTHER of the same series is *Appendix Vergiliana sive Carmina Minora Vergilio adtributa*, edited by Robinson Ellis. No paging. Paper, 3*s.* 6*d.*; cloth, 4*s.*—In the preface Prof. Ellis collects the ancient evidences for the authorship of these pieces, and discusses the state of the text. They fall into two classes: "Culex," "Copa," "Dirae," with sometimes "Aetna" and "Moretum," are preserved in old and good MSS.; the others rest on far inferior authority. However, the variant readings of all the pieces fill half of each page in the book. Whoever wrote them, and there is some reason to think that the traditional attribution is not all wrong, they are worth reading. We wish to repeat, after some years' experience, that there is no series of texts so well fitted for school use as the Oxford Bibliotheca.

The Ajax of Sophocles. With a Commentary abridged from the larger edition of Sir Richard Jebb. By A. C. Pearson. xlviii+208 pp. (Cambridge University Press.) 4*s.*—We have already expressed our opinion that a good school book cannot be made by the simple process of cutting out matter from a large commentary; and we therefore regret that we cannot very highly commend this abridgment. Like the others of the same series, it is made by omitting the translation, critical details, and the discussion of alternative views where one is decisively supported; there are also a few trifling additions. The result is to give a book which will be useful to boys or men preparing for one of the usual public examinations, especially in revision; but for the ordinary schoolboy, or indeed anyone at a first reading, it gives a great deal too much in our opinion. The distracting effect of many notes must be well known to schoolmasters.

English.

Virginibus Puerisque.—Mr. M. G. Edgar, who has already edited two other treasuries, sends a "Treasury of English Verse for Boys and Girls" (Harrap, 2*s.* 6*d.*). It contains 204 pages and is remarkable for pieces which are not usually met with. There is no arrangement, and we think we should have liked still more of the unknown work: for, as it is, it reads like a *new* book. The "Ideal Senior Poetry Book" (94 pp., Relfe, 9*d.*) is quite satisfying, but less ambitious. The "Myths of the Red Children," by G. Wilson (154 pp., Ginn, 2*s.*), is an admirable prose introduction to Red Indian folklore. The three parts of the "Royal Treasury of Story and Song" are admirably illustrated, well bound, and very cheap (10*d.*, 1*s.*, and 1*s.* 3*d.* respectively; Nelson). Eight supplementary readers (4*d.* each, Macmillan), well printed and of good size, introduce us to old friends—fairy tales, Aesop, Andersen, and many others. Messrs. Charles and Dible also send (4*d.* each) "Three Famous Voyages," "Three Founders of Empire," and "Three Famous Women," good supplementary readers; and Mr. H. Frowde sends "Oxford Readers," Books I. and II. (8*d.* and 10*d.*), clearly printed and well pictured. Black's "Literary Readers," Book III. (1*s.* 4*d.*), belongs to a series praised before for letterpress and illustrations. Six little "Oxford Story Readers" (2*d.* and 3*d.*) are a welcome addition to the large number of such books (Frowde). A number of booklets come from Messrs. E. J. Arnold—"Bright Story Readers" and "True Tales for my Children" (4*d.* each); and the immortal "Old Christmas," with all the good illustrations of Caldecott, is reissued by Messrs. Macmillan at 1*s.* in red cloth. The reading of this again and again with a class of twelve-year-old boys is one of this writer's cherished memories.

MESSRS. BELL send Coleridge's "Ancient Mariner" in the selected ballads edited by A. Guthkelch (1*s.*). Messrs. Ginn publish "Rhymes and Stories" (1*s.* 6*d.*), by Mr. F. Lansing—well illustrated, an excellent book for little ones; and Messrs. Oliver and Boyd send two of their well-edited

and well-pictured readers, Books V. and VI. (1s. 6d. each). Mr. Edward Arnold sends "First Friends in Literature" (1s. each), "The Talisman," "Tom Brown," "A Christmas Carol," "Robinson Crusoe," and "Parables from Nature." The same publisher gives us the "Tennysonian Epoch" (Epoch Series, 1s. 6d. each), by Mr. Stobart. It is well done. Mr. Goggin edits for the University Tutorial Series "Paradise Lost," Books IV. and V. (1s. 6d.), with notes and an introduction, and Mr. Fowler has collected specimen essays as materials and models for composition (Macmillan, 2s. 6d.). This last book, which contains a valuable introduction, should be read along with the "Writing of English" (Clarendon Press, 2s. 6d.), lately published by the Academic Registrar of the University of London. All these reprints will have their reward when we give English its proper allowance of time in the time-tables.

Geography.

The International Geography. By Seventy Authors. Edited by Dr. H. R. Mill. xx + 1088 pp.; maps, diagrams, &c. (Macmillan.) 12s. net., or in separate parts at 1s. to 2s. 6d. each.—There are three books which every *teacher* of geography must either possess or have ready access to. They are "The Statesman's Year-book," Chisholm's "Handbook of Commercial Geography," and Mill's "International Geography"; and of these three the last-named is the one which can be least spared from the shelf of references.

This new edition is remarkable for the issue of the whole work in separate parts, as well as in one volume. These parts are suitable for the highest forms in the school, more particularly for individual students who have either a special penchant for the subject or who have examinations staring them in the face. To such they appeal by reason of their comparative cheapness, their succinct and complete narrative, and the addition of examination questions in which the prospective examinees may test themselves on every issue. Teachers, of course, will not, must not, be content with anything less than the whole book. They will find it as indispensable as an atlas, as interesting as travellers' tales, and as scholarly and accurate as a scientific work should be.

To those who are yet unacquainted with the merits of the "International Geography," a short notice of its plan and contents will be interesting. The main book consists of two parts: (i) a short introductory part, dealing with the general principles of geography in the natural order of its departments, mathematical, physical, biological, political, commercial; (ii) a long detailed narrative, treating of the great continents and their countries and regions in due order. Throughout the book each section is written by a specialist or recognised authority—in many cases a native—in the country under consideration. Each author was allowed to write in his own language, and it is interesting to note that fifty-three chose English, eight German, five French, and one each Dutch, Danish, Spanish, and Portuguese as their medium of communication. Each foreign contribution was translated under the direct supervision of Dr. Mill, who also naturally, as editor-in-chief, had a free hand and control over the entire work. In this way both continuity and unity were secured. A recognised order was enjoined and followed in the treatment of countries—configuration, geology and climate, people, industries and trade, political divisions, and statistics. Sketch-maps and diagrams are plentifully interspersed in the text. They are supremely illustrative of points broached in the text, and they supplement—certainly not supplant—the ordinary atlas. The statistics are kept well in hand, and relegated for the most part to short tables at the end of each section; the necessary warning is furnished that they should be used relatively rather than absolutely. Each chapter closes with a list of standard references for the subject-matter of the chapter. These are particularly useful and as up-to-date as in the nature of things they can be. A good index of between 6,000 and 7,000 names enables any special point or place to be turned up with the minimum of trouble. The book has really fulfilled its primary object, viz., to give geographers a first-rate standard work of general reference.

Mathematics.

Problems in Strength of Materials. By William Kent Shepard. iii + 69 pp. (Ginn.) 6s.—Some years ago it was a frequent source of complaint among students of engineering that they had few examples on which they might test and improve their knowledge of the theory of "strength of materials." This scarcity of simple examples is now being remedied; the present collection contains examples that illustrate all the important branches of the subject, and that are sufficient in their variety to meet the needs of the ordinary student. No answers are given, as is stated in the preface, "in order to emphasise that the goal is a proper solution, and not a mere numerical answer"; yet there is another side to this question of omitting answers.

Practical Integration. By A. S. Percival. 86 pp. (Macmillan.) 2s. 6d. net.—It is stated in the preface that "this little book is intended for men who, whether engineers, electricians, or those engaged in physical or chemical research, make a practical use of the calculus." The various rules for dealing with integrals are clearly stated, but the number of exercises by which the reader may test his ability to apply them and acquire facility in applying them is not great. The illustrations are mainly, though not exclusively, geometrical. It seems to us that the readers whom the writer has chiefly in view do not usually have that facility in manipulation that will make the book very easy reading for them, but the subject in its elementary bearings is presented very clearly. The book contains tables of trigonometrical ratios, hyperbolic logarithms, and exponential functions.

The Canterbury Puzzles and Other Curious Problems. By H. E. Dudeney. xxiii + 195 pp. (Heinemann.) 3s. 6d.—For all who are interested in puzzles—and what person, old or young, of healthy mind is not?—this book will provide ample scope for the exercise of ingenuity. The problems are stated with all the necessary clearness of language and appeal to very different types of intellect. To those who are inclined to think that puzzles are necessarily a mere means of wasting time, the wise words of the introduction may be fittingly recommended for consideration.

Science and Technology.

Lessons in Practical Hygiene for Use in Schools. By Alice Ravenhill. 750 pp. (Leeds: E. J. Arnold.) 5s. net.—There is a certain modicum of hygienic knowledge which should be at the fingers' ends of all school teachers. There is something more which they should possess in addition, since, without it, their knowledge must want that breadth and fulness needful for its satisfactory application. And, beyond this elastic limit, there stretches a wide expanse of correlated facts which possess great intrinsic value,

although not absolutely necessary to the equipment of the school teacher, and are for the most part practically beyond the acquisition of all save such as possess a special interest in the subject and are favoured by exceptional facilities for its study. Miss Ravenhill's reputation as a student and successful teacher of her subject is established. With the experience thus gained, she has sifted and combined material collected from many sources into a series of lessons on general, personal, and social hygiene, replete with appropriate demonstrations—each with clear and concise directions for carrying it out, with notes as to the inferences to be drawn from the several phenomena observed. The result is a book packed so full of useful things that it may well serve as a work of reference for the lecturer to science and technical classes, while containing nothing beyond the comprehension (though much beyond the immediate needs) of the teacher in an elementary school. The treatment of the subject is thorough and the style simple and easy, so that an intelligent application of its methods should materially help towards "making the teaching of hygiene on practical lines an effective part of our national education"—an ideal to which Prof. Sadler looks forward hopefully in the preface which he contributes to the volume. The book is convenient in size, well printed on thin but opaque paper, and the illustrations really deserve that name. Its usefulness is supplemented by a full index; there are also a bibliography of works suitable for reference or advanced study and a glossary of technical terms. The short list of errata and corrigenda is almost unavoidable on the first appearance of a work covering so much ground. But there is a statement on p. 70 which should be relentlessly expunged from future editions. The legend that the so-called "growing pains" of childhood are most commonly due to the greater relative growth of the long bones of the limbs, as compared with that of the muscles and nerves attached to them, is but a purely hypothetical assumption. At this time of day it ought to be a forgotten error. It is extremely undesirable that there should be accorded to it any appearance of expert authority such as would seem to justify indifference to those insidious forms of acute rheumatism, far from rare in early life, and to the earlier symptoms of tubercular joint disease, which are really important danger signals, the neglect of which, still much too common, is not seldom attended by irreparable disaster.

Health in the School. By J. S. C. Elkington. 100 pp.; two plates. (Blackie.) 2*s.* net.—The two striking features of this little volume are the amount of useful information included within its pages, without any effect of compression, and the sturdy, practical common sense which pervades its teaching. While not pretending to compete with the larger text-books on school hygiene, it presents in a clear and interesting form a very able *résumé* of what the schoolmaster or schoolmistress ought to know of the subject, and incidentally drives home the truth of the vitally intimate connection between bodily health and educational progress. It contains also many useful hints as to the means by which buildings and furniture, not ideally perfect in themselves, may often be adapted to fulfil their intended purpose without any sacrifice of sanitary efficiency. While Dr. Elkington recommends that the child be advised to practise total abstinence until the age of twenty-five is reached—when, if ever, he should be capable of forming a rational decision on the subject for himself—he is no bigot, and he pours merited scorn upon the too lurid diatribes of some modern, so-called "temperance" reformers. There is sound wisdom, too, in the caution lest children be allowed to leave school "with a dim idea that" alcohol "is some weird poison sold by chemists, and consumed only by blotchy-faced drunkards."

The fifth edition of the chemical section of the "Catalogue of Laboratory Requisites," published by Messrs. Philip Harris and Co., of Birmingham, forms a ponderous volume; it is well bound, and printed on good paper. The illustrations are very numerous and clear, being for the most part reproductions of photographs. Although the list is classified as "Chemistry, Vol. I.," a considerable part of its 720 pages is devoted to barely related subjects, such as microscopy, petrology, and meteorology. The catalogue includes full lists of apparatus for use in the various departments of chemical technology connected with the brewing, mining, cement, and iron and steel industries. Special attention is also given to the analysis of gas, water, milk, and soils. Less than half the volume is occupied by general chemical apparatus. Among the balances described are several new types specially designed to stand the hard wear of schools. The list of thermometers is a full one, and includes instruments suitable for every type of work. The new silica ware has an entire section to itself; the comparatively moderate prices at which it is quoted will certainly bring it into use in the many cases where the solubility and high expansion coefficient of glass are disadvantageous. Elsewhere we notice some cheap and simple forms of stirring apparatus and a strongly made school spectroscope. The list of chemicals, reagents, and stains appended seems very complete. The catalogue throughout shows signs of having advanced with the times.

Art.

Common Object Diagrams; Three-tone Method. By G. C. Duxbury. Nine diagrams, 20 in. × 25 in. (Chapman and Hall.) 6*s.* per set.—Mr. Duxbury has made a very commendable endeavour to break away from the beaten track, and seeks to arouse fresh interest and enthusiasm in the drawing of common objects by means of his "three-tone method," which consists in drawing on brown or tinted paper with black and white and coloured chalks. Though this method—depending as it does for its effect on light and shade—is calculated to present difficulties when practised under the imperfect conditions of lighting which prevail in many schools, there can be no question that it is a far more rational method of representation than is an outline on white paper, and that it is calculated to impress a pupil much more strongly with a sense of the form and proportion of the object under consideration. The diagrams are not intended to be used as copies, but are to serve as a guide whilst the students draw from a similar object; these instructions strictly adhered to, this set of diagrams could be made the basis of an extremely interesting and valuable course of work.

Linear Perspective Drawing. By Captain Wheeler Holohan. 94 pp.; illustrated. (Cassell.) 6*d.* net.—This manual contains, in form convenient for everyday use, a series of articles contributed to the weekly journal *Work*. Commencing with a clear exposition of the necessary geometrical definitions, and some preliminary exercises in geometrical construction, the student is taken through a course of work dealing with the perspective representation of objects, chiefly of an architectural character. The exercises are admirably gradated, and the diagrams and explanations are extremely lucid. Anyone wishing to obtain quickly a practical knowledge of the principles of perspective will find this a most useful little book.

Bacon's Photographic Nature Drawing Cards (Leaves). Part i. Twenty-four cards. (Bacon.) *2s. 6d.*—This excellent series of photographs of natural leaves commends itself. Great care has evidently been taken in the selection of perfect specimens, which are so arranged and lighted as to show every detail of serration and surface-marking; by the help of a reading-glass the more minute features are easily distinguishable. The pictures are apparently natural size, or perhaps in some cases a little larger, and comprise in the series a representative selection of British leaves. Invaluable at a time when leaves are scarce, they will be useful for reference at all times in connection with either the nature-study or the drawing lesson.

Miscellaneous.

The Public Schools Year Book and Preparatory Schools Year Book, 1908. xcvi+687 pp. (Swan Sonnenschein.) *13s. 6d.* net.

The Schoolmasters Yearbook and Directory, 1908. 494+590 pp. (Swan Sonnenschein.) *7s. 6d.* net.

These excellent works of reference are this year more complete than ever. The first contains all the facts about the public schools likely to be sought by inquirers, and the information regarding entry into the professions should prove very valuable to parents and guardians. A chapter on how to become a chartered accountant appears for the first time.

The "Schoolmasters Yearbook" has become indispensable to educational workers, and we acknowledge gratefully our indebtedness to it. It is not only a very full educational Who's Who, but a treasury of information concerning the numerous departments of secondary education. It is to be hoped that the publishers will be rewarded by an even greater circulation, so that they may be encouraged to continue their efforts to ensure thorough accuracy and to make those additions year by year which are necessary to ensure completeness.

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 Oral Method (?) and the Reform Method.

AT the last annual meeting of the Modern Language Association it was urged that reformers must not trust to the quiet propagation of their ideas, but must shout from the housetops, until even the deaf may hear.

Far be it from me to suggest that my friend, Mr. Atkinson, is deaf; that would be strange indeed for a phonetician! His interesting article, however, is not unlikely to mislead some who have but a slight acquaintance with the controversies of modern language teachers. They might, for instance, come to the conclusion that the writer did not belong to the band of reformers; but he does.

He refers to an "oral method," meaning oral teaching without method. It seems to me that a good deal of harm is done by the use of the expression "oral method." It is so easy to mistake it for the reform method. But the reform method is at no stage merely oral; its exponents never encourage haphazard talking. They demand a careful selection of the rudiments of the grammar and the common words of the vocabulary in the early stages, and a judicious graduation throughout. The idea that talking in the foreign language is sufficient has never commended itself to them. Many, indeed, object to kindergarten French because it is almost necessarily unmethodical.

Mr. Atkinson's protest against exclusively oral work to the neglect of reading and writing is fully justified; to judge from my personal experience such teaching is not common in secondary schools.

But when he suggests that his statement that "a fruitful cause of much error is the attempt to teach pupils a foreign language when they are as yet possessed of a very insufficient basis of their mother tongue" will "sound a heresy to those teachers whose creed it is that the mother tongue should not be employed in a foreign language class," I cannot help feeling that he has gone astray. Reform teachers avoid the use of the mother tongue *as far as possible*, with exceptions and for reasons which I need not detail here; but it is quite consistent with this that they should demand a good knowledge of the mother tongue as an essential before the pupils start a foreign language. They have long realised that pupils who know something about the sounds of their native speech, who have learnt to express their thoughts in a clear and well-connected fashion, and who have acquired the elements of grammar, are far better equipped for the study of a foreign language than those whose English teaching has been poor; and that they will have an advantage whether they are called upon to use their mother tongue in the foreign language class or not. I for one can see no heresy here.

Let us consider the other "heresy." Mr. Atkinson believes that "if opinions were collected from modern language teachers who had had experience of both methods, it would be found that the majority were of opinion that they could, in a given time of, say, two or three years, obtain better results in the spoken language with a sound grammatical study of the language plus oral work than with a system of oral work leading up to grammar." This, he adds, "will appear heresy to the Inductivists." Again there is a misunderstanding, if I am right in assuming that "inductivist" stands for one who follows the reform method. It must be repeated that the reform teacher does not recognise a "system of oral work leading up to grammar." He knows too well that grammar is essential even in the earliest stages.

Arguments about modern language methods would be easier to follow if a clear distinction were made between the imparting of knowledge and the practice which makes perfect. That the practice should be in the foreign language is becoming generally recognised, whether it be fresh words or fresh grammatical phenomena that are to be made familiar to the pupil. With regard to the means of imparting knowledge, the attitude of the reformers is often not rightly appreciated. In saying "avoid the mother tongue in teaching new words" and "teach the grammar inductively," they are guided by the same motive: they desire to encourage the activity of the pupil. It is obvious enough that to give the English of the new word, or to state the new grammar rule before an example of it occurs, is the quickest mode of procedure. But the quickest is not always the best. By letting the pupil find the meaning of a new word in the manner of the reform method you are repeating familiar words, suggesting synonyms, opposites, connected verbs, adjectives, &c., with the result that you have not only kept his mind alert, but have started a number of associations in his mind which will help to fix the new word in his

memory. Give him the translation, and he has made no effort whatever; further, you have started one association only, and that an association which is not of the highest value. Cases may arise when the usual methods are not available; then the English word may be given. The experienced teacher using the right books finds these cases are rare.

Similarly with the grammar. Most of the elementary facts can be gathered by the pupils from their book if it is the right kind of book. If they are allowed to collect instances of the formation of the plural of substantives or the feminine of adjectives, they will soon realise what is regular and what is irregular. They will arrive at certain rules. If they are trained to look out for points of grammar, they will become more and more observant. Give them the rule, and you fail to train their faculty of observation. Here again cases occur when a reference to English usage, or a discussion in English of a grammatical feature of the foreign language will be advisable.

Mr. Atkinson rightly refers to the absurdity of supposing that the process of acquiring a foreign language is wholly analogous to that of learning the mother tongue. Some harm may have been done by advocates of a "natural method," as it was called. It is just the absence of method that makes the distinction between the efforts of the little child and the pupil at school. When, however, Mr. Atkinson maintains that the infant learns its mother tongue "by a system of trial and error, and has no power of induction," I cannot help wondering how much study he has given to infant speech. I confess I am not quite sure what he means by a "system of trial and error"; but to deny that there is a power of induction is quite contrary to my experience. When a little child hears a new substantive, and of its own accord at once forms its plural by adding -s, or when it makes the mistake of saying *brang* for *brought*, it is applying knowledge gained from other words in its experience; it has found a rule and applies it.

The chief purpose of Mr. Atkinson's article was to warn against parrot-work, to emphasise the importance of methodical teaching from the very beginning. This warning is needed, and it has always been uttered by the earnest supporters of the reform movement. They think too highly of their work and of its aims to imagine that a purely oral "method" can lead to any satisfactory result.

Walter Rippmann.

It sometimes happens that in expressing his opinions a speaker or writer fails to see the possible interpretations that may be put upon his words. Such has happened in the case of my paper "Psittacus Loquitur." Prof. Rippmann's criticism gives me the opportunity of trying to make my views clearer. I believe that he and I are very closely in agreement.

My paper was prompted by results that came under my notice in some examination work. Prof. Rippmann rightly distinguishes the reform method from what I called and what others, for whom my remarks were specially intended, often call the oral method. It is noticeable that I did not use the term "reform method" in my article. That the term and its general meaning were not unknown to me need not be proved here. I say "general meaning," because in minor details reformers differ in opinion, though *im grossen Ganzen* they are in agreement. It would have been better if I had made this distinction as clear in my article as it existed in my mind at the time of writing.

With reference to the first heresy to which Prof. Rippmann refers, I may say that he does not belong to the class of teacher to which I referred. There are, however, such. My argument would be clearer if more developed. I urge the necessity of adequate training in and knowledge of English before proceeding to a foreign language. There is nothing novel in this. It is part of the creed of the M.L.A., as well as of a large body of teachers who do not happen to belong to that association. But the extremists of the oral or natural method may well reply: "English does not affect us in our foreign language classes because we do not use it." Against such a reply was my argument directed.

Prof. Rippmann's next paragraph helps to elucidate my meaning. By "Inductivists" I meant the extremists of that view. I should not class Prof. Rippmann among them. I have myself used his books.

The last paragraph but one of the criticism raises a point upon which it is possible that Prof. Rippmann and myself may differ. I suspect, however, that here, too, we are really largely in agreement. The phrase "by a system of trial and error" was meant to convey the idea that a child gradually acquires certain linguistic knowledge; using that acquired as a basis, it proceeds to form new words on the analogy of those it already knows. This, as Prof. Rippmann points out, results in *brang* instead of *brought*, *mouses* instead of *mice*. This I call a system of trial and error. Now I believe that Prof. Rippmann would be among the first to agree that this method is to be avoided as far as possible in the teaching of foreign languages. Such examples as *tus* for plural of *tu* by induction from *il*, *ils*, or other "s" plurals, *j'ai etré* by induction from *aimé*, *vingt-et-six* by induction from *vingt-et-un*, *j'ai doux ans* by induction from *dix*, *il-y-ont n'a six* by various inductions, *je avoira*, *tu avoires*, *il avoire*, *nous avons parlons*, *vous avez parlez*, are the kind of result which such induction, or, as I call it, "the system of trial and error," produces. These are not invented by me, but are actual instances from examination papers. It is this kind of thing that is to be prevented, not encouraged. I do not call this "induction" in the proper sense of the word; it is rather argument by analogy, often false analogy. Induction proper requires a much larger field of experience than the child possesses, a larger collection of individual cases than he has yet met with. Only upon such can any induction be safely based or the child "find a rule and apply it" with safety. That much good can be done, especially in developing the power of induction proper and in cultivating the power of observation, by a judicious and graduated development of grammatical knowledge from the examples that occur in the work I do not only not deny, but endorse. But I still maintain that the induction is really done by the teacher, who selects his material so that the results which he asks his pupils to "induce" can hardly fail to be correct. He would not, for instance, collect such examples as *homme*, *hommes*; *il*, *ils*; and then ask the pupils to form the plural of *tu*; or from the spelling of *j'ai six ans*, *j'ai dix ans*, ask his pupils to write down from dictation *j'ai douze ans*.

L'Empereur demande à Octave Feuillet: "*M. Feuillet, dit-on des combats navals ou des combats navaux?*" "*Autant que possible ni l'un ni l'autre, Monseigneur.*" Induction had failed Napoleon III., and in such cases, and in irregularities generally, I shrewdly suspect that most reformers resort to a non-inductive method, though it may be a method of observation, that is, a method by which the new form is first presented in a sentence, not as an isolated grammatical fact.

I hope that these remarks, though they have run to

much greater length than I intended, will help to clear up some of the points raised by my friend, Prof. Rippmann. HAROLD W. ATKINSON.

Northwood.

Chemistry as a School Subject.

TEACHERS of elementary chemistry cannot be too grateful to Prof. Cohen for the discussion which he has started on this subject in your columns. He speaks as an examiner, and in this way has become familiar with many of the difficulties present in a boy's mind which are often undiscovered by the teacher; but surely it is a mistake to blame the subject for this. It is the teachers who are to blame for not perceiving and removing these difficulties. No one will deny the existence of the "mysteries, paradoxes, and perplexities" Prof. Cohen has so ably pointed out, though perhaps many of us did not fully realise them before; but it is just upon these very "mysteries, paradoxes, and perplexities" that the value of chemistry as a school subject largely depends.

It may, I suppose, be taken for granted that the object of a school education is mental training and the formation of character, and that the best school subjects are those which afford the greatest opportunities for the attainment of these ends. Elementary chemistry, properly taught, undoubtedly provides these opportunities in a most marked manner, because in virtue of the difficulties referred to it renders absolutely necessary an insistence on clear logical thought and expression; it shows the importance of due observation of the external conditions accompanying the changes under investigation; it cautions the pupil to be on his guard as to what may and what may not be reasonably inferred from a given train of reasoning; it teaches him to seek for the why and wherefore of common beliefs, and to set about it in a common-sense (*i.e.*, scientific) way; and in a thousand and one ways induces habits and methods of thought that must have a most valuable effect in after-life.

With this end in view, the teacher of chemistry must carefully select for consideration such problems as are capable of fairly easy and definite experimental elucidation with the means at his disposal. These problems will very largely consist of an investigation of the composition of certain bodies. Where there is a choice, he will, of course, select bodies familiar to the class, but his main consideration will always be the possibility of clearly and definitely working out their composition by simple methods. To select, as one of your correspondents seems to suggest, such difficult substances as carbide and petrol, simply because they are familiar, is, to my mind, to destroy much of the educational value of the subject. On the other hand, to lead the pupil by a connected train of reasoning, founded on and illustrated by his own experiments, to a true appreciation of the meaning of combustion or the composition of water, is to develop his reasoning powers, and to show clearly the way such problems can be attacked by means of organised observation and accurate experiment.

There are two aspects of such problems, which are of fundamental importance in teaching and must be kept well in mind if we would utilise to the full the power of elementary chemistry to train the reasoning faculties. The first has been already noticed—the external conditions accompanying an experiment. For example, mercury when heated turns into the red rust or oxide, while this very oxide when subjected to the same treatment turns into mercury. Put thus, the statement is perplexing enough, but when it is pointed out that the mercury must be heated in presence of air, and the rust in its practical absence (in a narrow test-tube), the difficulty at once disappears.

The second is the necessity for giving the class the results of work done by the most careful investigators of the subject under consideration. A train of argument often depends upon accurate experimental results; and although it is possible to get very good results even from a class of beginners, yet our *main* object is not so much to teach manipulative skill as to develop the faculty of logical deduction. Again, in some cases an important link in a chain of evidence is formed by an experiment which, either from its difficulty or from its requiring costly apparatus, is unsuitable for class work. A case in point is Lavoisier's work with mercury and air, work of great importance in leading up to the explanation of combustion. Such experiments may be as far as possible illustrated practically, but the actual apparatus used should be exhibited by means of pictures or lantern-slides, and copied into the boys' own note-books, together with the results obtained from them. F. T. CRAMPHORN.

Merchiston Castle School, Edinburgh.

IN the interesting correspondence that has been going on for some months on "Chemistry as a School Subject" very diverse views, such as the following, have been expressed:

(i) That it has no disciplinary value at all.

(ii) That the training in reasoning power it is capable of giving is of the same value, or even higher, than that given by mathematics or classics.

I cannot subscribe to either view; yet I hold that its disciplinary value is great, though of a totally different kind, and therefore not comparable with that resulting from mathematical or classical instruction. Nor is this value enhanced by straining after a strictly logical presentation of the subject. In brief, chemistry does not provide us with a series of flawless proofs like mathematics. Certainty in it is not generally attainable, while accuracy, such as even elementary mathematics and classics demand, would be regarded with suspicion. The vigorous though puzzling attempts made by some correspondents to suggest irrefragable elementary proofs that the hydrogen does not come from the zinc or the water, but from the acid, may afford some evidence of the unfitness of chemistry to compare with classics or mathematics in work of the kind above described.

Its real value consists in forming habits of caution, in the ability to suspend judgment rather than to pronounce it, in learning to *weigh* evidence and not to go beyond it, in the willingness to regard conclusions suggested by experimental work as provisional hypotheses only. No doubt it is trying to be unable to arrive in every case at a perfectly definite conclusion. But it is this that constitutes its chief value as a disciplinary subject. Are we not frequently obliged to suspend our judgments in questions of history? Ought we not to do so constantly in politics, in social affairs, and even in the smaller world of school life? For acquiring such habits of mind, chemistry supplies an ideal training. F. BRETT.

Cranleigh School, Surrey.

Suggestions for the Teaching of History.

IN teaching history it is not important that children should remember many dates, but it is important that they should know the sequence of events. The following plan will be found especially helpful to teachers who are taking the outlines of history with young forms, or lives of famous men and women in history. The whole of British history can be divided into periods with titles;

these periods printed on strips of cartridge paper and pinned around a form-room—*ex.*: "The Stone Age, 200,000–1000 B.C.," "Keltic Britain, 1000 B.C.–1 A.D.," &c. The children should be encouraged to collect pictures to illustrate these periods and pin them up under the right dates. Many of the pictures can be drawn by the children themselves during the drawing lesson. When pictures have been carefully put up under every period—illustrating the dress, architecture, and manners of the time, as well as the events—a glance around the room will be sufficient to teach some history and to excite curiosity. The pictures should not be too large, and should not be framed, but mounted on brown paper and pinned up by the children. And I would say, do not let it all be too perfect; let it show that wise children only have done it, not experienced men and women.

The possession of such a room will fill the children with many new ideas. These are two suggestions I have had already from them:

(1) That a history museum be started in connection with the pictures, to contain (*a*) dolls dressed by the children to illustrate the costumes of various times, and (*b*) products such as coal, starch, tobacco, &c., bearing labels showing when they were first used in Britain.

(2) That tin soldiers be used to represent the battles as we come to them, and that a fresh battle be arranged on some convenient table every week.

These last two ideas have so far only been partially carried out. The children at present are engaged in trying to depict with dolls and tin soldiers an incident during the siege of Lucknow—Jessie's dream.

Apart from the actual history that children learn through this picture scheme and museum, they get other valuable lessons; for we all know that a child gains more by doing itself than by listening to us. Active, eager little boys and girls with ideas, if they are allowed to work out their ideas, and if we do not keep them always listening to us, will make earnest, helpful men and women. And we should ever remember—history specialists though we be—that our business is not so much to teach history as to help the child to develop along its own lines.

My last suggestion will be called—only a game. Well, it pleases children. A child pretends to be some historical person, and tells the story of that person's life, leaving out the name; then the rest of the form try to guess as the story goes on whom she represents. The girl who first guesses correctly takes her place. A clever child can give quite a long history before her identity is discovered, especially if she knows incidents that the class does not know. Thus it can be seen how this game encourages independent reading and helps the child in oral composition and in public speaking (the latter very necessary, since so many of our children become teachers).

Sometimes children tell their stories so well that the class listens in delight and forgets to guess—and the teacher learns—but that is only sometimes. The most some of us can do who teach in the younger forms and in elementary schools is to lead children to the borderland of the subject and let them peep at unexplored lands; then let us take care that that peep shows only pleasant things—lands worth traversing; and let those take care whose greater privilege it is to lead them right within that they do not damp that child-like enthusiasm which should be ours for ever.

I shall be pleased to give information as to how to obtain good, cheap pictures for walls.

RUBY K. POLKINGHORNE.

L.C.C. Stockwell Secondary School.

The Training of Teachers.

MAY I, as one of the "sweet innocents" for whom Prof. Armstrong shows so much kind consideration in his article in your last issue headed "The Training of Teachers—a Public Danger," ask: (i) If he has had any experience in or first-hand knowledge of a training college for secondary teachers? In such, the students, as a rule, have sufficient intelligence to realise that technical terms are necessary in any branch of learning, and that many thoughts which are only reached by means of study, and are invaluable as a mainspring of practice, need new and "technical" words to express them. (ii) Whether his constant reference to the fair sex as budding teachers is an acknowledgment that men either are too self-satisfied to desire to read works on the theory of education, or that they still consider training beneath them?

The whole tenor of the article gives one the impression that the writer has never studied the theory of education himself, and that, therefore, as natural corollaries (*a*) he considers it entirely irrelevant to the question of practice; (*b*) those who offer themselves for training are all of the type of the girl who gained a headache by thinking; (*c*) the majority of women who teach are "failed housemaids."

I read in the same article that "some measure of training is desirable in order that certain tricks of the trade may be learnt." I should like to inform the writer that I had not been at a training college many days before we were told that we were expected to have thoroughly mastered "the tricks of the trade" by the end of the first month. Perhaps he will conclude that after the first month, therefore, we did nothing; on the contrary, that is when work began in earnest; and I can safely say that not a week has passed since I entered the teaching profession in which I have not had cause to be thankful for my year's training, and to feel that it has helped me to avoid very many mistakes. MARGARET SCOTT.

Warwick.

British Association Report on Curricula

AT the meeting of the British Association held last year at Leicester, a committee of the association presented a report upon principles which should be borne in mind in determining the curricula of secondary schools for boys. The report has been widely distributed, but I have still some copies left, and shall be glad to send them to persons interested in the subject if the request for the report is accompanied by a stamped addressed envelope.

R. A. GREGORY.

Dell Quay House, near Chichester.

The School World.

A Monthly Magazine of Educational Work and Progress.

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AN ENGLISH TEACHER'S WORKING LIBRARY.

By NORMAN L. FRAZER, M.A.
Whitgift Grammar School, Croydon.

IN previous numbers of THE SCHOOL WORLD there have been articles on working libraries for modern language, history, geography, and other teachers.[1] It will not be denied that there is at any rate equal need for similar guidance for the teacher of English. The idea was recalled to the writer's mind by the forthcoming publication of a leaflet, issued by the new English Association, entitled "Books on English Literature for the use of Teachers"; but necessarily the Association's leaflet differs in two ways from the present suggestions, for it sets a limit of £25, and it is concerned only with literature. We are glad to say, though, that an exhaustive leaflet on "Method" books may shortly be issued by the Association. In this article, however, the scope is so much the smaller in that a limit of £5 is proposed, and that consequently elimination of many desirable books is essential if the main ground is to be covered at all adequately. It should be further added that no attempt will be made to include texts—properly so called—in the present survey, except so far as reference may be made to a few outstanding editions. At the same time, in the process of elimination, books will be mentioned which, although not retained in the final list as essential to the working library of the teacher of English—too often anything but a specialist—will be very desirable additions to the school reference library.

The works to be included in the £5 library here proposed will be marked by an asterisk—a device which will obviate the necessity for a tabular statement, and allow where necessary a certain freedom of comment. It must not, however, be thought that any attempt has been made to include all standard, or even desirable, books in the different sections, or to refer to highly specialised works at all. The teacher's needs for class purposes have been kept solely in view; books that would appeal merely to his personal culture or scholarship have been, of necessity, omitted, as have been a large number of semi-class books with which he is doubtless familiar, but the first appeal of which is to his pupils rather than to himself. Again, scattered in professional journals—English and American—there is a mass of material, largely devoted to method, which he may unearth from the bibliographies appended to some of the more general treatises.

For the present purpose, it may be taken that the teacher's needs will fall under four main headings: Method, Language, History of Literature, and Literature itself; and without being too rigid in our classification we shall here confine ourselves as closely as possible to these aspects.

Most teachers will be familiar with the general books of method—Fitch, Cookson, Barnett, Spencer, Findlay, Adamson, and the like—which have special expert chapters on English teaching, but perhaps fewer remember the interesting "Introduction on the Teaching of English" at the beginning of Hales's "Longer English Poems." More special books are *"The Teaching of English in the Elementary and the Secondary School," by P. Chubb (Macmillan, 4*s.* 6*d.*), *"The Place of the Mother Tongue in English Education," by H. C. Wyld (Murray, 1*s.*), and *"The Teaching of English," by Carpenter, Baker and Scott (American Teachers' Series, Longmans, $1.50). The last-mentioned book may fairly claim to realise the aim advanced in the general editor's preface, that it discusses "the essential features of class instruction, and the various helps which are available for teachers' use." As it has thirty pages of well-planned bibliography, it should, together with Prof. Wyld's little book, provide us with the essential minimum for this branch. Mr. Chubb's work, a volume in the "Teachers' Professional Library," is devoted in equal parts to elementary and secondary schools. In the latter half it has illuminating chapters on literature, composition, and versification.

In treating of language—and indeed of literature as well—we shall have to remember that teachers will often require special as well as general authorities, according to the period with which they happen to be concerned at any given time. Probably the book most generally stimulating and useful will be found to be *Bradley's "Making of English" (Macmillan, 4*s.* 6*d.*). It is not a large volume, but the nature of the ground covered may be indicated by epitomising its contents; it treats of: the making of English grammar, what English owes to foreign tongues, word-making in English, changes of meaning, and some makers of English. Many, too, will be glad to

[1] See THE SCHOOL WORLD for September, 1899; March, 1901; January, 1902; and November, 1904.

have Prof. Wyld's "Historical Study of the Mother Tongue" (Murray, 7s. 6d.). *Sweet's "History of Language" offers a broad view, and needs no commendation (Dent, 1s. net). The most generally satisfactory historical English grammars—to venture near the border-line of class-books—have been written by *Morris and Bradley, "Historical Outlines of English Accidence" (Macmillan, 6s.), and Sweet (Frowde, 4s. 6d. and 10s. 6d.). We prefer the former. Skeat's "Primer of English Etymology" (Frowde, 1s. 6d.) will be found useful, and the same author's *"Concise Etymological Dictionary" (Frowde, 5s. 6d.) indispensable. A most suggestive study of modern usage will be found in *"The King's English," by H. W. F. and F. G. F. (Clarendon Press, 6s.). One of the most helpful signs of language teaching at present is the attention paid to phonetics, and a working library should certainly include one—if not both—of Rippmann's "Sounds of Spoken English" (Dent, 1s. 6d.) and *Sweet's "Primer of Phonetics" (Clarendon Press, 3s. 6d.). The section will hardly be complete without *Abbott's well-known "Shakespearian Grammar" (Macmillan, 6s.).

In making a selection from the innumerable books on the history of literature, we have no easy task, and can hardly hope not to commit sins of omission, or even to avoid the opposite. We might, however, try to compound by recommending one notable series, *e.g.*, Bell's "Ages of English Literature," Macmillan's "History of English Literature," or Blackwoods' "Periods of European Literature," under Prof. Saintsbury's general editorship; but these long series are apt to be very unequal. The new "Cambridge History of English Literature," of which vol. i., "From the Beginnings to the Cycles of Romance," is ready, has for our present purpose the disadvantage that it will cost five guineas; but that both it and Gosse and Garnett's "English Literature, an Illustrated Record," should find a place in the school library is perhaps not an extravagant hope. The illustrations in the latter will prove invaluable for class purposes. The matter of expense will also deprive us of Courthope's "History of English Poetry" (Macmillan, 10s. a vol.), if not also of Ward's "English Poets" (Macmillan, vols. i. to iii. 7s. 6d., vol. iv. 8s. 6d.), and of Macmillan's "History of English Literature," in six volumes. But of the last series money might be found for *Stopford Brooke's volume dealing with the period up to the Norman Conquest and *Saintsbury's "Elizabethan Literature" (7s. 6d. each). If to the two volumes we have chosen—Brooke and Saintsbury—be added the last author's *"Short History of English Literature" (Macmillan, 8s. 6d.) and *"The Age of Dryden" (Bell, 3s. 6d.), we shall have a fairly satisfactory nucleus. In the series to which the last volume belongs may be especially recommended *Seccombe's "Age of Johnson" and *Herford's "Age of Wordsworth." Another, perhaps more interesting and certainly less academic history, by Edmund Gosse, should be mentioned. It is entitled "Modern English Literature," and forms the third volume of "Short Histories of the Literatures of the World" (Heinemann, 6s.). It treats of the period between Chaucer and Tennyson. *Raleigh's "English Novel from its Origin to Sir Walter Scott" (Murray, 2s.) is an example of a special aspect which we can hardly omit. If in this section we have not starred Taine's History (3 vols., Chatto and Windus, 2s.), and Ten Brink's "English Literature," translated in Bohn's Series, it is not through want of appreciation of the former's picturesqueness or of the latter's authoritativeness.

In passing to our next division—literature proper—we are conscious that we shall often seem to recur to the section we have just discussed; but judicious subdivision may reduce almost inevitable overlapping. To begin with the general, we fancy that many teachers will be glad to have *Laurie Magnus's "How to Read English Poetry" (2 vols., Routledge, 2s. 6d. each) and *Stephen Gwynn's "Masters of English Literature" (Macmillan, 3s. 6d.), as well as *Matthew Arnold's "Essays in Criticism" (2 vols., Macmillan, 3s. 6d. each). Of really good classified selections from English literature there is no lack, from *Palgrave's splendid "Golden Treasury of Songs and Lyrics" (Macmillan, 2s. 6d., and other cheaper reprints) to the fuller volumes in the Clarendon Press series. The latter include: Ward's "Old English Drama" (5s. 6d.), Skeat's "Specimens of English Literature, 1394–1579" (7s. 6d.), Morris and Skeat's "Specimens of Early English" (vol. i., 1150–1300; vol. ii., 1298–1393; 9s. and 7s. 6d. each), and "Typical Selections from the best English Writers" (2 vols; i. Latimer to Berkeley, ii. Pope to Macaulay; 3s. 6d. each). Sir H. Craik's "English Prose Selections" (5 vols., 7s. 6d., Macmillan) is very serviceable. For particular periods there are outstanding works which must be included; such are *Pollard's "Chaucer Primer" (Macmillan, 1s.), *Dowden's "Shakespeare Primer" (Macmillan, 1s.), the same author's *"Shakespeare: His Mind and Art" (Kegan Paul, 12s.), *Boas's "Shakespeare and his Predecessors in the English Drama" (Murray, 6s.), Sidney Lee's "Life of Shakespeare" (Smith, Elder, school edit., 2s. 6d.), and *Stopford Brooke's Shakespeare and Milton Primers (1s. and 1s. 6d.).

The foregoing list, scanty as it is, brings us within a pound of our maximum expenditure, and there still remain important points upon which we have not yet touched—Anglo-Saxon, the nineteenth century, prosody, biography, and comparative literature, to mention only the most obvious. But even a teacher's working library would hardly be satisfactory without some attempt to fill in these gaps. There are then *Sweet's "Anglo-Saxon Primer" (Clarendon Press, 2s. 6d.), *"Anglo-Saxon Reader" (Clarendon Press, 8s. 6d.), and *"First Middle English Primer" (Clarendon Press, 2s.) for the earliest period of

our literature, and *Saintsbury's "Later Nineteenth Century" (Blackwood, 5s. net) and the same author's "Essays in English Literature, 1780–1860," for the latest. These the school library will wisely supplement with Stopford Brooke's studies on Tennyson and Browning. In biography and criticism, standard work for any special author is often available in the "English Men of Letters Series" (Macmillan, 1s. 6d. and 2s.), while *Johnson's "Lives of the Poets" (six chief lives, ed. Matthew Arnold, Macmillan, 4s. 6d., and in cheap reprints—*e.g.*, Dent's Everyman's Library), Saintsbury's "Loci Critici" (Ginn), Leslie Stephen's "Hours in a Library" (3 vols., Smith, Elder, 6s. each), and *Coleridge's "Biographia Literaria" (Everyman's Library, 1s.) will cover more general ground. In comparative literature may be suggested *Tucker's "Foreign Debt of English Literature" (Bell, 5s. net), the translation of Lolliée's "Short History of Comparative Literature" (Hodder and Stoughton, 6s.), and Blackwoods' "Periods of European Literature." For prosody—a much-neglected subject, gradually, however, coming into its own—there is an excellent introduction in *Lewis's "Principles of English Verse" (Holt, 4s. 6d.), and a more advanced work in Mayor's "Metre." Mr. Lewis's work is designed chiefly for the general reader, and the chapters on "Rhythm and Metre" and "Blank Verse" are very good.

A word remains to be said on texts. Standard editions of the more important authors will, it is hoped, be gradually put in the school library, but the teacher can nowadays, with a modest outlay, acquire for his own library a respectable collection from the reprints at present flooding the market. Everyman's Library, the World's Classics, the Red Letter Library, the Temple Dramatists, the Temple Classics, the Oxford Poets, not to mention the Globe editions, will of themselves supply almost unlimited texts; and there are several others equally good. It should be added that, by judicious buying of second-hand copies, the list that we have starred could be extended to include nearly all the books we have mentioned, or, at any rate, to allow a wide margin for buying a number of cheap reprints.

An analysis of the outlay suggested above would result in the following summary, the prices being subject, except in a very few cases, to the ordinary discount:

	£	s.	d.
Method		11	6
Language	1	8	0
History of Literature	1	19	0
Literature, &c.	2	14	0
Total	6	12	6
Discount	1	13	0
Approximate Gross Total	5	0	0

The apparent disproportion of the item "Literature, &c.," is, of course, fallacious, because it is in this section that every teacher will already have a more or less considerable library.

REFLECTIONS SUGGESTED BY SOME EXAMINATION STATISTICS.

By G. F. Daniell, B.Sc.

An article appeared in The School World for December, 1899, entitled "The Present Position of Science in Secondary Education." The writer discussed the statistical information supplied by the authorities responsible for the London Matriculation, Oxford and Cambridge Senior and Junior Locals, and the Higher and Lower Certificate examinations of the Joint Examination Board. I will now attempt to compare the position to-day with that eight years ago,[1] my opinion being that these statistics afford the best revelation obtainable, not of the ideal curriculum, but of what is actually being taught in the bulk of English schools beyond the primary stage.

London Matriculation.

The number of entrants for this examination has grown at a remarkable rate, as shown by the following table, which gives the principal optional subjects selected in January, 1899, and the corresponding figures for June, 1906:

Subject Selected	1899	1906
French	756	2,922
Chemistry	212	1,372
Mechanics	120	410
Greek	86	218
Magnetism and Electricity	26	261
Botany	26	335
Sound, Light, and Heat	24	584

Not only is there a marked increase of candidates in every subject, but the old disproportion between languages and science subjects has been removed. Whereas in 1899 out of 1,250 candidates 842 selected a language and 402 a science "option," in 1906 we find 3,140 choosing a linguistic and 2,962 a scientific subject out of a total of 3,253. It is permissible to conclude that the regulations have been successful in bringing about a singularly fair balance of studies. The figures suggest that mechanics is found more difficult than sound, light, and heat. The logical arrangement of these branches of physics, which occurs to the trained physicist as inevitable, is one in which mechanics precedes the rest; yet the more abstract character of this branch puts an obstacle to this order of presentation to the beginner. In dealing with the elements of physics, it may be a more sound practice first to present phenomena easily observed—*e.g.*, expansion by heat—and to hark back to mechanics after some experience has been gained by the pupil in the branches of experimental physics which make a more direct appeal to his sense-perceptions. On the whole, the verdict on these matriculation figures is "healthy."

[1] Omitting the Oxford Locals, as the Delegacy has altered the form of its report, making comparison difficult.

Cambridge Locals.

Let us first glance at a general table showing the *number of papers worked* in each main group of subjects by the Senior candidates.

Group of Subjects	1898	1906
English	10,327	17,043
Languages	3,391	4,363
Mathematics	1,590	5,215
Science	1,838	3,663

It is not easy to tell in what proportion the growth in the numbers is due, on one hand to increase in the number of candidates, or on the other to increase in the number of papers per candidate. Bearing in mind that the totals of candidates were, in round numbers, 2,200 in December, 1898, and 3,700 in December, 1906, it is probably fair to assume that the increase in the language section is entirely due to the growth in the number of candidates; the increase in English mainly to this cause, but partly to further subdivision of the subject. But the outstanding feature of the table is the large development of the mathematical section. I think that this gratifying progress is due in no small measure to the attainment of a wider view of the range of mathematics suitable for treatment in schools. This has led to a larger number of papers being set, and—what is far the most important gain—it has brought a concomitant infusion of new vigour and efficiency into the teaching. If my view be correct, the work of the British and Mathematical Associations is bearing fruit which may be measured by the statistician in terms of considerable magnitude. The dominant theme of the writer of the 1899 review was the stunted condition of the scientific side which the statistics for that date display so palpably; indeed, this plaint was the *raison d'être* of his article. There is now a reasonable balance of science and humanities.

The corresponding figures for the Junior candidates next claim our attention:

Group of Subjects	1898	1906
English	30,180	36,781
Languages	12,728	9,987
Mathematics	7,637	12,517
Science	6,440	7,384

In this case the number of candidates *decreased* from 8,470 in 1898 to 7,706 in 1906. The decrease in languages is rather surprising, but it should be mentioned that "spoken French" was a subject taken by a fair number of candidates, but necessarily omitted in this calculation because the official return leaves it out. The character of the falling off is evidenced by the fact that only 2,464 papers were worked in Latin, comparing unfavourably with 6,659 in French. Among the Senior candidates the French papers outnumbered the Latin three times, so that it is probable that we are facing the exclusion of Latin entirely from the curriculum in certain cases, rather than the postponement of its study until a later age. Mathematics maintains its vigorous advance in the Junior as in the Senior division. The science subjects make a fair show in the aggregate, but the following analysis exhibits certain weaknesses:

Cambridge Locals, 1906	Senior	Junior
Experimental Science	5	682
Chemistry, Theoretical	652	1,437
,, Practical	508	1,262
Heat	480	799
Sound and Light	249	349
Electricity	306	453
Botany	449	918
Physiology and Hygiene	248	388
Physical Geography	720	1,092

The advance of biological studies is a satisfactory feature of the above table, but practical examinations should be instituted. If this were done, would the result be as satisfactory as in the case of chemistry? Why is there no examination in practical physics?

In advocating the extension of practical examinations in science, I am not disregarding their defects, many of which, probably not all, could be remedied by a drastic but necessary reform in the organisation and methods of conducting the examination. My contention is that ability to answer a set of questions in an examination paper is not, and should not be, the objective of the teacher or the taught; whereas a "pass," in heat, say, may be given or withheld with but small regard to the genuine *training* of the candidate, as matters stand at present. The defects of the "practical" examination, as often conducted, are mainly due to the strong element of "chance," which may easily vitiate the whole process. To overcome this, the presiding examiner must take part in the examination, testing the candidates *viva voce*, and he must be clothed with a moderate amount of discretion to vary the questions and the method of conducting the examination. It should be his duty to make the conditions as fair as possible to all candidates, and to see that a candidate was not absolutely deprived of all opportunity of showing what he or she could do through ignorance of the meaning of a particular word or phrase. The risk of inequality of standard among different examiners must be faced; it would be reduced if those of a group of neighbouring centres could meet shortly before the examination, and receive instructions from the central examiner and discuss them with him. Possibly we may require the "College of Examiners" suggested by Lord Rosebery. If some plan such as I have roughly sketched is impracticable for the Oxford and Cambridge Syndicates, then I must infer that the "Locals" are no longer adaptable to modern needs. We want examinations that are *local* in more than the sense that they are held in a number of convenient centres, and there is needed a Central Board which

shall standardise and certify the varied local examinations, *bien entendu*. The Board of Education might take this in hand, possibly through the Consultative Committee; but I think the majority of teachers would prefer that all the universities should unite to form such a standardising body as might avoid many of the dangers of bureaucracy.

Certificate Examinations of the Oxford and Cambridge Schools Examination Board.

The schools sending boys to these examinations for the higher, school, or lower certificates are usually represented on the Headmasters' Conference; while the girls, who constitute about one-quarter of the totals below, are being educated in the high schools and the leading private schools. We can therefore get a fair estimate of the effective curriculum which forms the basis of the intellectual training of the majority of the future "Guardians of the State," to borrow a title rendered familiar by Plato's "Republic." There were 2,240 candidates for the higher certificate last year, and 1,027 for the lower, and the table shows the number taking each subject.

Subject	Higher		Lower	
	1899	1907	1899	1907
Latin	1,358	1,164	698	647
Greek	1,189	935	373	365
French	1,257	1,490	954	974
German	345	289	253	213
Mathematics, Elementary	1,824	1,757	960	1,003
,, Additional	714	503	908	975
Scripture	1,374	1,222	733	727
English	845	903	594	718
History	1,281	1,373	661	880
Natural Philosophy, Mechanical	168	170	55	71
,, ,, Physical	111	130	261[1]	195[1]
,, ,, Chemical	159	153	108[2]	44[2]
Physical Geography and Geology	38	23	356	364
Biology	131	262	—	79
Music	38	30	—	—
Drawing	66	160	38	28

To the members of the British Science Guild, and to all who think that the scientific spirit needs to be inculcated during school life through the medium of experimental science, the figures just given must be sorry reading. This is less surprising when one recollects that until about a year ago the "first-grade schools" with a decent laboratory equipment could be numbered on one's fingers. I direct attention to the fact that out of 1,027 candidates for the lower certificate a total of 34 passes in the first class were obtained in the science subjects. Of these 34 no less than half were in botany, the successful candidates being mostly girls. Among the upwards of 2,200 candidates for the higher certificate we find 83 distinctions in science. This is better, and shows that individual boys with a strong bent towards science are permitted to follow that bent, and are taught successfully. This grudging admission of the claims of experimental science does not satisfy anyone who has realised the importance of educating the nation, especially the upper and middle classes, so that the future may find us not wanting in men of scientific intelligence. I am not referring to the expert in chemistry or agriculture, or other branches requiring specialised training with which the schools have little to do. We science-teachers, and many of our colleagues who have studied curriculum problems, demand at least *some* experience of practical science for every boy and girl. This demand comes as earnestly from a more potent source than the "interested" science-teacher, viz., from the thoughtful parent. Many a parent wishes he could send his son—presumably an average boy of no particular intellectual bias—to a public boarding school without fear lest the result might be to condemn him to ignorance of all that is connoted by "science." The statistics, and still more the report, of the Schools Examination Board show how few are the public schools where scientific studies are given the position which is their due.

[1] Physics and Chemistry. [2] Chemistry and Mechanics.

General Review.

Reviewing collectively the series of statistics which have been quoted, there are distinct evidences of improvement in the past seven or eight years. It is encouraging to observe the growth in the numbers taking biological subjects and drawing. There is a real advance in French, English, and chemistry, and a bound forward in mathematics. But I have found my task somewhat oppressive, because I share the views of those educational reformers who deprecate the perpetual pressure of external examinations on the child all through its career. Let us acknowledge the good service which the Junior Locals have rendered to education in years past. These examinations undoubtedly did much to raise the teaching standard in many small private and grammar schools from the level to which it had sunk when the Oxford and Cambridge Delegacies began their work half a century ago. At the present day I think these external examinations, except those of school-leaving standard, are acting as a drag on the wheels of progress, hindering and cramping the teaching, depriving the teacher of initiative, and setting before children a somewhat low and mercenary idea of the aim of learning. So I am not sorry to notice that there is a falling off in the numbers presented for the Junior Cambridge Locals, and at the same time record with pleasure that all the higher examinations show an increased candidature. The latter fact suggests that the leaving age is rising and that the unwisdom of cutting short the school career of our boys and girls is being recognised.

Lord Rosebery said the other day that all England could be divided into examiners and examinees. I believe his words are true; but *ought* they to be true? On a few occasions in the life of everyone—"Yes." To the extent that the trade of examining and preparing for examinations usurps the place of teaching—"No."

Since writing the above I have received tables giving the numbers of candidates for Cambridge Locals, December, 1907. These are not strictly comparable with the numbers of worked papers quoted in the article, but they show, in an intensified degree, the characteristic features of the statistics criticised. Thus Latin continues to decline, biological science and drawing are gaining ground. It is a matter for regret that only 274 Seniors selected German. The total number of Seniors is 4,267 and of Juniors 7,103, thus continuing their respective rise and fall.

SOME DUTIES AND DIFFICULTIES OF AN EDITOR OF TEXT-BOOKS.

By Cloudesley Brereton, M.A.

I.

To some language reformers the ordinary annotated edition is not a thing to amend but to end. It is the chief prop and buttress of translation, and translation is just now a very ticklish word to mention in reforming circles. Yet, without entering on a long disquisition of the use and abuse of translation, I would point out *en passant* its possible sphere of influence in modern language teaching in the two stages into which the latter naturally falls. Personally, I see no objection to it in the opening stage, so long as the teacher regards it primarily *as a means to an end,* the end being to help the pupils to acquire, mainly for reproductive purposes, as much vocabulary as they can. Some teachers certainly find translation a shorter cut to this object than ringing the changes on the names, professions, and complexions of the average heterogeneous farmyard population with which the typical introduction to French, for some inscrutable reason, opens. I say inscrutable, for the elaborate agricultural operations therein described are not infrequently a sealed book to the town child, whose only *champ d'expérience* is the pavement. The whole question of the employment or exclusion of translation in the opening stage must depend largely on the teacher's honest desire to use the tools that suit him best. So long as the *result* is the same, I see no cause for criticism.

Again, all but the most advanced and one-sided reformers will, I think, admit that translation is an essential part of the second stage of modern language teaching, that is, when the pupil's knowledge of French has become firmly established. This seems to me, in fact, the point at which the comparative method should come into play in philology, in syntax, and in semantics, to the benefit of the two languages concerned, though naturally never to the extent of imperilling the pupil's grip of French. To refuse to avail oneself of translation at this stage would be to fall into the old blunder of studying arithmetic, geometry, and algebra in water-tight compartments.

Assuming, therefore, that there is a place in the curriculum for translation, what sort of texts shall we use? A certain number will prefer to use "clean" texts only, and there is much to be said for the practice. Again, there are those who would prefer that the notes should be in French, with perhaps a *questionnaire* in French appended. This no doubt is the more excellent way, provided that the *questionnaire* is used and the notes are read. Even when they are in English, this is not always the case. In view, however, of the torrent of texts at present pouring out from the various publishing houses, edited on entirely old-fashioned lines, the object of the present writer is not so much to lay down counsels of perfection as to try to raise the general level by pleading for certain *minima* of thoroughness and completeness on the part of editors and publishers.

First comes the question of the selection of suitable texts. It is very welcome to note the increasing tendency to publish short stories or episodes complete in themselves which can be read in a term. Formerly editors too often erred in publishing books that were far too long, or else they went into the opposite extreme and produced books of snippets mainly descriptive of scenery or persons, rarely, if ever, of actions or incident. Again, there seems to be a distinct slackening in the editions of that anæmic classic, "La jeune Sibérienne," and of that dull dog, "Le philosophe sous le toits." Though the choice of excellent reading matter has been greatly widened during the last few years, there is still a strong influence at work among the publishers which apparently seems to make them consider it necessary, if one brings out an edition of, say, "La Mule du Pape," every one must add it to his series. Let them urge their editors-in-chief to go yet further afield. The harvest yet unreaped is immense.

Of introductions it is more difficult to speak. Some read like a dry and gritty abridgment of some hoary encyclopædia, flavoured now and again with a little criticism of the Sandford and Merton order. Others, in spite of the obvious constraint of limited space, glow with the personal note, which is sure to kindle in some of those who read them a kindred flame of interest.

It is, however, in the section allotted to notes that the conscientiousness or the carelessness of the commentator is most patent. No doubt the number of pages assigned to the notes is a determining factor in many cases, but it ought to determine, not their number, as some vainly seem to think, but their length. Too many editors seem to regard the allotted room as so much space to be filled in somehow. They apparently run over the text, jot down a few *obiter dicta* on such sempiternal "chestnuts" as *ça=cela*, the redundant *ne*, or the meanings of *on*, translate some of the better known idioms, and explain most of the more obvious allusions, becoming especially expansive when they encounter such proper names as Louis XIV., Napoleon, or Paris.

Now it is submitted that the conscientious editor should proceed on more or less opposite

lines. If there is any reason for his editing the book at all (which is not always patent), it is that he should act as guide or cicerone to the average pupil. To do that he must put himself as far as possible in the boy's place; that is to say, his first step should be to translate the whole text carefully in order to find out those passages which are obscure in the original, or those which, while plain as a pike-staff, are extremely difficult to render into average English. He will probably be surprised to find how comparatively numerous that second category of passages is, and if he happens to take, as an experiment, a book that has been edited by one of the "happy-go-lucky" commentators mentioned above, he will be surprised to find how completely this side of the work has been ignored. Further, the close attention that translation compels him to give to the subject-matter will make him duly sensitive to the many allusions that a rapid reading would fail to reveal. Not a few of these may involve some research. Yet, if he have the scholar's instinct, he will make it a point of honour to clear up all reasonable obscurities and summarise in a few lines what may sometimes have cost him the labour of hours.

The editing of a book is, in fact, a polite education. If a man has not hitherto learnt what the real difficulties of translation are, he will have learnt them by the time he finishes. He will speedily rid his mind, assuming he has a real grip of the niceties of the French language, of that comfortable heresy that the classically trained man, with his half knowledge of the language, has done so much to propagate, that French goes naturally into English, which by interpretation means it goes according to the nature of the translator's knowledge—well, if he knows it well, and, if not, otherwise. It is possible that the delusion is due in part to the fact that in respect to a classical language the difficulties of translation are rather difficulties of construction than of vocabulary. The thought content is, as a rule, comparatively simple; the concepts and ideas are more or less clear-cut and defined. The main danger is that by using a far more complex means of expression such as the English of to-day, we are liable to read into the Latin author a certain amount of modern sentiment which at most is only implicit in the Latin, as the full-blown rose is implicit in the bud. Hence the tendency in translation to take refuge in slightly archaic English in the effort to find an equivalent to the comparatively simpler psychology of the Romans.

But with French translation the difficulties are not so much those of construction as of expression. Here we have a language of a family closely allied to ours, connected by frequent intermarriage and intercourse during the centuries, and, in fact, to a large extent of common origin so far as the vocabulary is concerned. If it possesses, except in very modern French, a comparatively poor poetical vocabulary, on the other hand, owing to its analysis of the emotions, it is infinitely more subtle and complex than Latin, and even than our own in some respects. This no doubt is partially due to the fact that between the philosopher in his closet and the ordinary pot-boiling novelist there is nothing like the same break in continuity as there is between, say, John Stuart Mill and Miss Marie Corelli. The reason for this is probably twofold. The tradition of culture that affects all who put pen to paper in France makes the philosopher who writes more literary and gives the novelist a touch of philosophic culture. What, however, has probably most contributed to keep the two extremes in touch is the innumerable army of critics and essayists, who occupy an intermediate position between those who put new ideas into circulation among the *élite*, and those who are responsible for giving currency to new feelings and sentiments among the masses. The two coinages are regarded as legal tender by all classes, whereas the philosopher in England has his own particular mint and standard of value, and the novelist another, so that the specie of the one is often mere token money to the other, if it is not, in fact, mere worthless paper.

The would-be editor soon finds that not only is the French language in certain ways in advance of our own as an instrument of mental expression, but, and here is the real crux of the matter, words which appear alike at first sight are really more or less distinct. This, of course, is due to the difference in the association of ideas, which do not follow exactly the same line of development in French and English minds—a clear proof, by the way, that French and English are both by heredity and by education profoundly different. Hence there is always a danger that a careless word-for-word translation will resemble a faultily put together machine, in which everything runs a little untrue, because the original model has not been accurately copied. The art of translation largely consists in the successful search for delicate shades of meaning. And perhaps it is not too much to say that, if *grammar is logic in the concrete, translation is at bottom applied philosophy*, since it is a training and practice in the meaning of words—and did not Renan himself define philosophy as the close study of some twenty or thirty simple words, such as God, man, soul, immortality, and the like?

Translation, therefore, is very largely a study in semantics, either of single words or whole phrases. I say whole phrases, for words in juxtaposition affect each other as much as single tints do when brought into any scheme of colour; nay, when in constant juxtaposition they actually effect a positive κρᾶσις and run into one another, so to say, if they do not make a complete blend, as in the words "a gentle man." It is proposed, therefore, to outline in a second article a rough classification of some of the difficulties that present themselves to the conscientious editor from this point of view.

A Catalogue of Natural History Specimens for Sale. By Robert Brogden, 28, Colville Square, London, W.—This list is well worth careful perusal by curators of school museums, as well as teachers and private students of zoology.

THE INHERITED HABITS OF DOMESTIC ANIMALS.

By E. Stenhouse, B.Sc. (Lond.),
Associate of the Royal College of Science, London.

THE present article has been written in response to a desire, expressed by several teachers, for a more extended treatment of certain questions not usually dealt with in school books on nature-study. The article will, it is hoped, provide material and suggestions for additional lessons on a subject which is peculiarly adapted to the best methods of nature-study. The lessons ought, in the first place, to cultivate accurate observation of the habits of domestic animals, and, secondly, to encourage sound reasoning in the attempt to explain these habits.

The chief interest of the work lies in the investigation of such habits as are not obviously associated with the present conditions of the animals' lives, and in trying to account for marked differences in the habits of animals living under conditions which are on the whole similar. Experience has shown that the best results are obtained when the teacher confines himself, so far as possible, to putting leading questions to the pupils: giving information only when the facts are manifestly outside the experience of the class. Mere guessing ought to be discouraged by a refusal to accept any suggestion unless the pupil is prepared to support it by at least circumstantial evidence or plausible argument.

The general method may be illustrated by the following example. If a pupil were asked to explain why the domestic hen cackles after laying an egg, he would probably suggest that the object of the cackling was to announce the fact to the farmer or, perhaps, to the other fowls of the flock. A few judicious questions would, however, make it clear to the class that such an announcement—however welcome to the farmer—can serve no useful purpose to the hen, or to the flock, and that the cackling seems curiously inconsistent with the universal instinct of birds to conceal their eggs.

It is believed that most of our domestic breeds of fowls are descended from a stock closely resembling the wild jungle-fowl of India, and pupils will be prepared to find that the habits of these or similar wild fowls will throw some light on the puzzling behaviour of the domestic hen. Mr. W. H. Hudson states, in his "Naturalist in La Plata" (Dent), that the half-wild fowls of La Plata nest at a considerable distance from the feeding grounds, sometimes as far as 400 or 500 yards away. He observed that, after laying an egg, the hen "would quit the nest, not walking from it as other fowls do, but flying first and then walking or running until, having arrived at the feeding ground, she would begin to cackle. At once the cock, if within hearing, would utter a responsive cackle, whereupon she would run to him and cackle no more." Mr. Hudson suggests that the cackling enables the hen in the dense tropical jungle to rejoin the flock after laying an egg, and that the clamorous cackling of our fowls is nothing more than a perversion of a useful instinct.

With the help of a little guidance the class will be able to arrive at the same conclusion by their own reasoning, and it is precisely in the exercise of this reasoning that the value of the lesson consists. It will be seen that the following are the most important links in the chain of argument which the children may be induced—by means of questions—to build up for themselves: The increased safety of the eggs which the jungle-fowls secure by nesting at some distance from the feeding grounds; the risk, in such circumstances, that the hen will be unable to find her way, through the thick undergrowth, back to the flock; the help of the cackling habit in doing this; the accompanying risk that the cackling may betray the position of the eggs to hungry egg-eating enemies; the precaution of postponing the cackle until the nest has been left far behind; the further risk that enemies may find the eggs by following the hen's track back to the nest; and the safeguard against this danger which the hen takes by flying during the first part of her return journey. A similar method may be employed in giving lessons on the habits of other domestic animals described below.

Dog-Habits as Illustrating a Highly-Developed Social Instinct.—Compare the method of hunting of a pack of wolves with the behaviour of a pack of hounds. It is not unlikely that the domestic dog's habit of running round in circles when greatly excited is a survival of the method by which wolves still confuse a victim at bay, before the final spring—perhaps one of the most exciting moments in the life of a hunting animal. The dog's greedy manner of eating, and his tendency to bury a bone or other food remaining after his appetite is satisfied, are the natural result of descent from ancestors whose every meal was taken in the midst of a snarling, yelping pack of other greedy claimants for the scanty fare. The nomadic lives of packs of wolves explain why the domestic dog is indifferent to the charms of any house, however comfortable, unless it contain his master: the representative of the leader of his pack. The habit of turning round several times before lying down—useless to the dog on the hearthrug—is natural enough to a wolf trying to make himself a comfortable bed in the grass of the jungle. There can be little doubt that the dog's moral sense is the direct result of the loyalty, of the recognition of responsibility to his fellows, and especially to his leader, which was the first condition of successful pack-life. It may be objected that horses, sheep, and cattle, the ancestors of which also lived in communities for mutual benefit, show little, if any, moral sense. But it should be borne in mind that in these cases the co-operation was for purposes of defence only—a very different thing from the perfect organisation required when the food supply itself, the prime necessity of life, depends on mutual help. It is not surprising, therefore, to find in the dog

a stage of ethical development which is not approached by any other animal tamed by man.

The Cat.—Nearly all the differences in instinct to be seen between the cat and the dog are probably due to differences in the manner of life of the wild ancestors. The wild cats are solitary hunters, and in catching prey depend largely upon cunning; hence the unsociable habits, the high intelligence, and the self-sufficiency of the domestic cat. Wild cats live in settled homes or dens; domestic cats show a great reluctance to leave houses to which they have become accustomed. The great contrast between the habits of cats and dogs becomes all the more interesting from the circumstance that these animals are so much alike in structure that they are classified in the same order (carnivora) of mammals, and when domesticated live under similar conditions.

An angry cat shows a certain amount of resemblance to a snake in the appearance of its head, the markings of its fur, and the movements of its tail. The hissing habit is still more striking. It has been suggested that wild cats may thus derive more or less protection from eagles, which are said to be extremely fond of cat flesh and also to hold snakes in great dislike and dread.

How Mammals Drink.—Charles Waterton long ago, and Herbert Spencer more recently, propounded the conundrum: "Why do horses, cows, and sheep drink as human beings do, by sucking in the water; whereas dogs and cats drink by lapping?" I have not seen any answer to the question, but suggest the following as at least a partial explanation. In eating, carnivora make great use of certain sharp-edged cheek-teeth (which have much the action of the blades of scissors) for cutting off small pieces of flesh or bone. The use of these teeth is plainly seen when a dog is gnawing a bone, and it is clearly dependent upon the power of opening the mouth widely. It seems likely that the wide gape thus rendered necessary would make ordinary drinking difficult, since it would probably allow the water to run out at the sides of the mouth. Hence the dog and cat scoop up water with the tongue and flick it to the top of the throat. Horses, cows, and sheep, on the other hand, seize their food with the lips and tongue, and cut it off with the front (incisor) teeth. A wide gape is therefore not required, and lapping is unnecessary.

Persistence of Ancestral Methods of Protection.—The powerful jaws and (often) claws of the carnivora render them largely independent, for purposes of protection, of the ordinary devices (*e.g.*, fleetness of foot and protective coloration) by means of which more helpless mammals escape from their enemies. For the same reason the carnivora are well able to protect their young, and to give them the educational advantages of a prolonged infancy to an extent which is impracticable with such animals as are compelled to rely upon speed whilst very young. Hence puppies and kittens are still helpless, blind, and deaf for some days after birth; while lambs, calves, and foals are able to follow their mothers almost from the first. It will be a useful exercise for children to explain why a young rabbit is blind and deaf for some ten days, whereas hares are said to be able to run almost as soon as they are born.

Protective coloration, in certain of its aspects, is not well shown in many domestic animals. This is easily understood when it is remembered that a variation of colour, which (owing to its conspicuousness) would inevitably lead to the early death of a wild animal possessing it, might be of no disadvantage whatever to a domesticated animal, and might thus be transmitted by heredity to succeeding generations. There is, however, one interesting fact, the significance of which is not generally known to the amateur naturalist: the fact, namely, that an animal's belly-surface is almost invariably of a lighter colour than its back. The appearance of solidity of a uniformly coloured object is largely due to the circumstance that the lower part is in shadow and consequently appears darker. (This may be well illustrated by the method of shading a drawing, say, of an egg; and by the superiority which a shaded drawing possesses over a mere outline sketch.) If, therefore, an animal's upper parts be of a darker colour, the shadow on the lower parts will be more or less neutralised, the appearance of solidity will be less marked, and the animal will be less easily noticed by enemies and prey alike.

Horses and Cattle Compared.—The domestic horse is probably descended from a stock inhabiting wide plains in countries which, according to Darwin, were "annually covered with snow, for he long retains the instinct of scraping it away to get at the herbage beneath." Domestic cattle do not show this instinct. Wild horses, although they live in herds, depend chiefly upon speed as a means of escaping from enemies. (Witness the tendency of a startled horse to take the bit between his teeth and run away.) They have, therefore, long and slender legs, and this fact in its turn renders a long neck necessary in feeding.

The structure of the horse's limb, with its single remaining digit (the third), is perfectly adapted to a high rate of speed, and its gradual evolution from the typical "five-fingered" limb of a long-extinct ancestor may be made of absorbing interest to children.[1]

In galloping, the horse's hind legs are the chief means of propulsion, a circumstance which possibly explains the advantage of the habit, of raising the forequarters first in rising from the ground, which may be observed in the domestic horse. Even in this attitude the position of the hind legs renders instant flight possible. The shying tendency is the survival of the instinct to leap quickly to one side at the first sign of anything unusual—a possible indication of a hidden enemy.

Wild cattle, on the other hand, rely principally for defence upon their horns, backed by the powerful head and neck; and the first instinct of the alarmed domestic cow is to lower the head

[1] See Flower's "The Horse" (Kegan Paul, Trench, Trübner and Co.).

threateningly at the foe. It has been suggested that the manner of rising from the ground (hind-quarters first) is associated with this instinct. Cattle are incapable of great speed, though on soft ground they can outdistance horses, owing to the nature of their more spreading feet. It may be here pointed out that the term "cloven hoof" is misleading; the "cleft" is the interval between the hoofs of the third and fourth digits. The remains of the second and fifth digits are to be seen at the back; the first digit has entirely disappeared. Since they do not rely upon great speed, cattle are able to enjoy the great advantages of a compound stomach and the cud-chewing habit, which enable them quickly to take in a large quantity of food (a serious impediment to flight), the mastication of which may be postponed.

Domestic horses and cattle retain the ancestral liking for society of their own kind, and horses seem capable of some affection for a human master, although their intelligence is probably greatly overrated. But in both cases the social instinct is vastly inferior to that of the dog, and never develops into a sense of loyal comradeship with mankind. Cattle, and especially bulls, are supposed by Mr. Hudson to harbour a smouldering resentment which bursts into flame whenever the domination of humanity is unduly displayed. Thus Mr. Hudson states,[1] for example, that a bull is only angered by a red rag when it forces him to fix his attention on a man, whom he always regards with unfriendly eyes. The display of the red rag is evidently regarded as an insult. Mr. Hudson continues: "It is a fact, I think, that most animals that exhibit angry excitement when a scarlet rag is flourished aggressively at them, are easily excited to anger at all times," and he mentions geese and turkeys as examples. Also, "the sudden display of scarlet colour sometimes affects timid animals with extreme fear." One is tempted to suggest that the excitement produced may be partly due to the fact that red is the complementary colour of green, and would naturally have a disturbing, if not a painful, effect upon creatures so habituated to green as grazing animals of necessity are. On this point of view, the bull is angry because the man forces his attention on the rag—which he would prefer to ignore—rather than because the rag forces his attention on the man.

The following books will be found useful in further study of the connection between the habits of wild animals and the instincts of domestic varieties:

Kipling's "Jungle Books" and "Just-so Stories" (Macmillan); Seton's "Wild Animals I have Known" and "Lives of the Hunted" (Nutt); Long's "School of the Woods," "Beasts of the Field," and "Fowls of the Air" (Ginn); Jack London's "Call of the Wild" and "White Fang" (Methuen); Buchanan and Gregory's "Lessons on Country Life" (Macmillan); Buchanan's "Country Readers" (Macmillan); Lloyd Morgan's "Habit and Instinct" (Arnold); Hudson's "Naturalist in La Plata" (Dent); Darwin's "Animals and Plants under Domestication" (Murray).

[1] "A Naturalist in La Plata" (Dent).

MAP DRAWING AS A PART OF SCHOOL WORK.

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THE most important thing to know about map drawing is what to avoid. The term includes productions of very varied character, from the rough sketch made in a couple of minutes, through maps of every degree of detail, up to the elaborate drawing with coloured contours that has occupied many hours of careful toil. But for our present purpose it will suffice to divide all maps into two classes, the sketch-map and others; and the second class, everything beyond the sketch-map, everything, one may say, in which time is spent on the drawing, as distinguished from the facts, means time wasted.

Unfortunately, there can be no doubt that much time is still lost in this way; if the fact were not otherwise notorious, the books and maps that publishers find it worth their while to issue would prove it—books and maps that have no other end than to lead men to squander precious hours in disguising from their class the true aim of geography.

The evil begins when time that might be spent on geography is spent on learning to draw. The range of geography, the range of the most modest syllabus yet printed, is so great that it is impossible that a class shall ever have exhausted it, impossible that they shall ever have nothing better to do than to draw maps. To take a concrete example: which class has advanced furthest towards a comprehension of geography—one that can draw an accurate outline of the British Isles; or one that, given an outline of the British Isles, can put on it approximately the isotherms of 60° F. for July, and of 40° F. for January; or, given a relief map of Europe, can put on it the lines of 30, 20, and 10 inches of rainfall? Yet either of the latter sets of lines, with some at least of their enormous geographic significance, can be *understood* and learnt in a fraction of the time required for the outline. It is matter of first-rate importance such as this that must be sacrificed if elaborate map drawing is to be practised. The thing is absurd.

It may sometimes happen that the drawing master is willing to teach a class to draw a map. That is excellent. The boys are learning to draw, and may conceivably learn a little, a very little, that will help their geography: a minute fragment of topography; or, less probably, the difference between latitude and longitude. That is a very different thing from giving up to the practice of drawing any of the too scanty time assigned to the study of the earth and its distributions.

For there is nothing inherently harmful in the elaborate map unless the time spent upon it be out of proportion to its importance. If it be, not only is time wasted, but a false idea is given of the relative value of different parts of the subject. Now unless a boy devote his whole school time to geography alone, the time spent upon a really

elaborate map *must* be out of proportion to its value. Or, to take a commoner case, if a boy has three hours a week for the subject—and that is probably above the average—then if he devotes one hour in the term to drawing a single map, the time he has given to it is out of proportion to its value. For, as has been already hinted, what he has thus learnt is nearly valueless. Topography is no doubt a part of geography, though not perhaps a part of first-rate importance in the early stages of education, but even of that he has learnt not nearly so much as he might have done by drawing at different times half a dozen sketch-maps, taking two or three minutes each; the outline he has drawn has been hidden from him by the detail, just as the general direction of a river is not impressed on the mind that is occupied with its less significant windings. The fact is, the whole process tends to obscure the significant by overlaying it with the trivial. The small detail which takes up the time in such drawings *cannot* be reproduced from memory; what can abide in the mind and be reproduced is the generalisation that a sketch-map gives.

Yet the relative position of town, river, and mountain is of fundamental importance, and there is probably no way of impressing it on the average pupil so good as drawing it. But his attention while drawing it must be on the facts represented, not on the finish of the drawing by which they are shown. It must be remembered that the ability to copy a map neatly and accurately in detail is in itself a mere accomplishment, valuable only to a professional cartographer; what a boy needs to learn is to seize the elements that are essential to the point to be illustrated, and to put down on paper those and no others, roughly, it may be, but effectively, with the least possible expenditure of time.

To begin with the last clause, "the least possible expenditure of time" involves the liberal provision of outline maps on which to insert the required facts, whenever the area is at all complex. Thus, most continents, if not all, should be provided, and any other areas the drawing of which would be difficult or lengthy—for example, the British Isles. And since so many of the facts that have to be inserted are immediately dependent on the relief, this should, as a rule, be provided too. For almost all purposes the best possible "blank" maps to provide are those which show the relief by coloured contours and have the rivers on them; and they are most useful when they differ from those in the atlas used by the class only in not having any names on them. Areas of simpler outline—*e.g.*, Italy or Spain, or perhaps Australia or South America—may be drawn by the pupil provided he is prevented from lingering over detail. On these last, on sketch-maps of river basins, and on some others, the relief has to be inserted. This may be done expeditiously with the aid of a convention which simplifies much of the work. Let it be understood that red indicates high elevation, high temperature or high pressure, and blue indicates low, and a vast amount of explanation on both sides is saved. Thus, if a boy, provided with a red and blue pencil, draws a red streak in a sketch of a river basin, it is recognised, even without a name, as a line of hills, as in Fig. 1 (taken from a notebook), where the red has been replaced by a thick black line.

Or if the teacher in putting the distribution of pressure on the blackboard draw some isobars red and others blue, the direction of the gradient is apparent without writing the figures on the

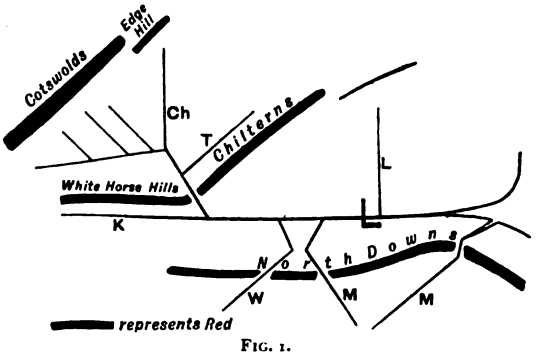

Fig. 1.

lines. Indeed, it is not long before the eye recognises [1] the direction of a gradient of any kind without consciously going through any argument as to the signification of the colours. In this way the distribution of temperature, pressure, or relief can be put on a map rapidly and roughly but effectively. In school work the relative changes of an element are wanted far more frequently than its absolute value. If it be desired to explain the monsoons, what is necessary is to show for summer and for winter two or three isobars and the direction of the gradient; that much boys can understand, and remember, and reproduce. It is neither necessary nor possible for them to remember the mean value of the pressure in different parts of the continent. Thus they can give the gist of the matter by a couple of lines,

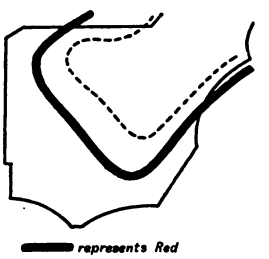

Fig. 2.—January temperature.

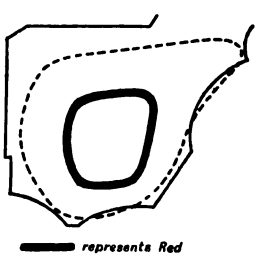

Fig. 3.—July temperature.

one red and one blue; and—no small incidental advantage—a glance tells the teacher where a mistake has been made.

In Figs. 2 and 3, which represent the distribution of temperature in the Iberian peninsula in January and July respectively, the thick black isotherms must be imagined to be red, and the thin broken isotherms to be blue.

[1] Compare Brückner's chromatostereoscopic system described in the *Geographical Journal*, June, 1907, p. 680.

We said such sketches should be "rough." The careful measurement of small detail does not improve a boy's map in any degree. It cannot represent the facts with authoritative accuracy; it is not wanted for that purpose. His object in making it is quite different: to explain—to himself if it be in his notebook, to the examiner if it be in an examination paper—the point which he is describing in words; sometimes it may altogether take the place of a verbal description. For such a purpose bold treatment, which emphasises the matter under discussion and subordinates or omits all else, is not only effective, but shows that the pupil has grasped the point at issue.

This brings us back to the first condition we prescribed for a satisfactory map, that "it should contain the elements essential to the point to be illustrated and no others." That holds throughout school work. Maps that contain everything there is to be known about a region, as some maps try to do, are of no use for schools. You must have a separate wall-map for each phenomenon you wish to explain, whether it be relief, temperature, pressure, rainfall, or vegetation. You constantly want to use one of these in connection with another; indeed, the final mental picture of the region should combine them all; but to be clearly comprehended by a class, each phenomenon must be presented separately. This refers to the first presentation of the phenomena; they are not permanently dissociated. A class, to use a previous example, could not be expected to put the distribution of rain in Europe on to a blank sheet of paper, or even on to a sheet containing the coastline and no more. But an average class will make a very decent map of European rainfall if the pupils are given a relief map on which to put it. But they will have comprehended it most clearly if they originally saw it on the wall on an outline map containing nothing else at all, hanging by the side of the relief map. The relation between the two, which would, of course, be continually referred to in the discussion of the facts by the teacher, becomes real to the pupils when they copy the rainfall on to such a "blank" relief map as is described above, for insertion in their notebooks.

To sum up. Sketch-maps and diagrams cannot be too frequent. Almost every point discussed can be so illustrated, and benefits thereby. It is generally easier to reach a boy's mind through his eye than through his ear. Do not then let him slowly elaborate one map showing much detail, but draw rapidly many small maps, or maps each illustrating a single feature, carefully excluding from them everything not immediately to the point.

Closely allied to the question of what maps a boy should make is the question of how much he should be taught about the making of maps by others. He should certainly understand the main principles which underlie the maps with which he is provided. He should have, for example, a general knowledge of the process by which the maps of pressure and temperature are produced. A description of the work that precedes the issue of each of the daily weather charts (which should be posted in every school) always interests a class. A good many people know that barometric readings are "reduced to sea-level" before they are put on a map, though fewer could tell you what that process means, or why it is gone through. But what proportion of the adult population have any idea that observed temperatures generally undergo a similar treatment? A satisfactory reason might be harder to give than in the case of pressure.

It is still more important that boys should realise that all maps are necessarily inaccurate in shape or area, or, more usually in school maps, in both. The few networks of latitude and longitude which are produced by projection in the mathematical sense of the word could only be comprehended in the higher mathematical sets of a school. They should certainly be taught to any boys advanced enough to understand them, but it should be done in the mathematical hour. Of the conventional and arbitrary methods by which the great majority of networks are produced a few typical examples should be explained, in order that the pupil may realise in what directions the different methods depart from the truth, and thus get an idea of the principles which govern the choice of a projection for a particular purpose. Probably a cylindrical orthomorphic (Mercator's), a homalographic equal-area (Mollweide's), and a conical projection would suffice. The one necessary precaution is the constant contrast of these or any other projection that may be used with the globe.

SCHOOL ESSAYS AND INDIVIDUALITY.

By W. J. Gibson, M.A.
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I.

ALL school subjects can be made to foster the child's individuality, but in English, and particularly in the regularly recurring composition exercises, a great opportunity lies to the teacher's hand of bringing to the surface some of the latent "self" in the child. Examiners know of the correct formal work in composition that is sometimes produced by a well-drilled class, when all the little essays are so much alike in their commonplace of thought and common mould of expression that even a grammatical error would almost prove a relief from the primness. One can conceive of the laborious effort by which the conscientious master has produced a uniformity of correctness that reminds one of the calico-clad forms in a procession of charity-school children. Many masters and mistresses, it is certain, value originality, and realise the opportunity that the weekly compositions offer for its encouragement; but may one put in a plea that all teachers of English should try to make the most of this aspect

of their work? It is both necessary and wise that much of what is done in English composition should be connected with the lessons in literature and history, and to some extent with those in the other subjects of the curriculum; but some part of the work in composition should be of the free and unrelated type that will, above all things, offer variety and novelty to the children, and serve as an outlet for individuality. Let the thoughts be their own, even if poor, and the form of expression theirs, even if weak. It is a wise master who shudders when he finds his own ideas, and the echoes of his own phraseology, in his pupils' essays. Huxley, after reading a set of examination papers in physiology which closely reproduced the statements of his text-book, is reported to have said in disgust, "Pah! I hate to have my own brains spat in my face."

It is not needful, where ideas are, to worry too much over errors of form. These can be righted gradually and unobtrusively. In this matter an ounce of originality is at any time worth a pound of "correctness." Self-expression, with the restraint that comes of self-control, is what is wanted. A full-grown respect for individuality will make one afraid to correct overmuch.

It is proposed to give here some account of the subjects selected in an experiment of this kind in English composition, carried on over several years. Illustrative extracts are given from some of the better specimens of the pupils' work, in the belief that these will be of interest to other teachers of English. It would be to miss the point of the experiment to suppose that this is offered in any sense as a model to be followed; for each district and set of children will have their own peculiarities, and this local factor will be carefully considered by the master in making his selection of subjects. The pupils dealt with in the case under discussion were boys and girls from fifteen to eighteen years of age, and what added interest to the experiment was the fact that some of them were bilingual, having Gaelic for their mother-tongue.

The earlier subjects were generally of a kind to admit of simple narrative treatment, such as letters on local events or personal incidents. These were followed by descriptions of scenes and persons, with a strong recommendation that the description of a scene was best done on the spot described or as soon after a visit to it as possible. Sometimes the teacher prescribed the subject, sometimes the class suggested one, occasionally each boy chose his own. Here are a few: "The Holidays," "On the Beach," "A Night in a Fishing-Boat," "An Angling Adventure," "A Day on the Moor," "A Visit to the Shiant Islands," "A Storm at Sea," "The Coming in of the Mail Boat," "Out with the Fleet," "A Fish Auction," "The View from Gallows Hill" (a neighbouring summit), "Cromwell Street on a Saturday Evening," "The Market Day," "A Picnic at the Butt of Lewis," "A Country Wedding," "A Reiteachd" (the betrothal ceremony which still survives in the Hebrides). A distinction is carefully drawn between descriptive work which deals with matter of fact, and in which accuracy and truth of observation are essential, and imaginative description where experience supplies only the basis. Here is an extract from one of the first kind on "A Moorland Loch":

We are seated on a small hillock beside a moorland loch whose dark waters lie sleeping peacefully at our feet. In the dim, blue distance the grey hills form the background. Between them and the loch is a long stretch of moor, with here and there a hill to relieve the monotony of its otherwise flat surface. To the right rises a precipitous hill and to the left another not so high. The day has been grey and cloudy, and the sun is slowly sinking in the west in a thick, blood-red bank of clouds. All nature seems asleep. Even the cry of the few gulls which are to be seen walking about on a small island in the middle of the loch is hushed. . . . Far out on the loch small trout leap at intervals, leaving slowly widening rings on the still surface. . . . All round the shores of the loch small headlands project into the water, covered with green lichen and withered bracken. From behind one of them a pair of wild ducks come slowly paddling, and on seeing us they rise into the air, their shrill quacking rudely dispelling the silence. Soon, however, they pass out of earshot, and everything becomes as still as before. The rift in the clouds slowly closes and we hear the far-off ominous growl of thunder. . . .

As an illustration of the imaginative type, the following extract from a description of Tir-nan-oige, the Celtic Isle of Youth, may be given:

Beyond the portals of the setting sun, surrounded by blue laughing waters, girdled with white sea-foam, lies the fair Isle of Youth. Softest of breezes blow in Tir-nan-oige, breezes that carry the scent of myrtle, clover and whin. Butterflies flit from flower to flower. Golden-banded bees hum over the fields of rich clover, and drink deep from the honied blooms. The gorse with its golden glory of blossom crowns the green braes of Tir-nan-oige. Behind the braes rise the wide moorlands, purple with heather. From the moors the glens go up to the seven hills. On these hills the bards sing, and on the seventh is the fairy spring. . . . Into this the Celt who would retain his youth must thrice plunge, thrice drink of its ice-cold waters. Fair are the golden sands of Tir-nan-oige, but fairer far are its purple glens. There, on each side of the laughing brook, rise heath-clad hills. Along the burn's edge the fragrant bog-myrtle grows, and the cool green bracken shows mid the purple slopes. From the hill-tops wreathed with the sweet honeysuckle flash silver waters, to join the brook below. In the glens the pipers play. The stately stag stands erect and listens to the fairy strains. . . . But above all, lost in the golden sunlight the larks are singing. They sing above the machair, above its blue and purple and gold; they sing above the clover-fields; they sing above the fairy well, where they and the blueness are one. In Tir-nan-oige they sing as no other bird can sing; in Tir-nan-oige, as nowhere else, they sing. . . .

Many old folklore tales are still handed down orally in the district, and some of these, especially those concerning the Daoine Sith or Fairies, are suitable subjects for such of the youthful raconteurs as have heard them in their early years.

The dramatic instinct is strong in young folk and may well find an outlet in their compositions. The exercises may be of the simplest: Mary's Pet Lamb gives an account of his day in school, or Little Jack Horner tells how he spent his Christmas Day; or they may be serious attempts to realise historic scenes and diverse opinions. A boy who writes "A Description of the Execution of Charles I.—by a Spectator," first from the point of view of a Cavalier and then from that of a Roundhead, will have sharpened his historical insight, and will have gained a fresh understanding of the seventeenth century. "An Account of Queen Mary's Landing—by one of her Attendants," "A Macdonald's Account of the Battle of Culloden," "A Londoner's Account of the Great Fire," are other examples of the same class of subject. Scenes connected with the period of history being actually studied in class and those suggested by the local history of the school district will naturally be preferred. Boys will take considerable pains in library-hunting to get their local colour right and to avoid any infringement of historical fact. They will also find a legitimate pleasure in tripping up in a friendly way their less careful companions. A recent exercise in the form of a letter written by one of the Pilgrim Fathers describing the voyage of the *Mayflower* exhibited some fairly close approximations to the Puritan point of view. After the exercises had been discussed in class their writers were much interested to have read to them the description of the actual voyage as given in "The History of Plymouth Plantation," by William Bradford, second Governor of New Plymouth, who had been one of the passengers on board the *Mayflower*. Scope may also be given for the exercise of dramatic aptitudes by the production of dialogues on a variety of interesting topics, and by the creation of dramatic scenes laid in selected periods of our history.

To give opportunity for individual selection of themes we tried one week last term an imaginary magazine for which each pupil was to supply an article on a subject of his, or her, own choosing. No two contributions were in the least alike. The complete list of subjects was as follows: "The Humours of Golf"; "How the Fairies dealt with Domhnull Càm" (a local folklore tale); "The Sea-Serpent" (this was illustrated with an imaginative sketch in colours of a fine sea-monster); "A Lewis Crofter's House"; The Children's Corner —(1) "The Two Princes," (2) "A Ramble on the Beach" (illustrated); "The Cripple Tailor's Adventure" (a translation from the Gaelic); "By Moonlight" (pencil sketches of various moonlight scenes with an introduction in verse); "Lawful and Unlawful Curiosity"; "The Friendship of Eachean and Aonghas" (a weird original tale with a tragical ending); "The Boys who did not believe in Ghosts" (a rhymed account of their visit to Ghostland, with a series of playful pen-and-ink sketches of their adventures—written by one of the most serious boys in the class); "Stray Thoughts on the Higher Education of Women"; "Christmas—Old and New"; "A Ceilidh" (a description of one of the evening gatherings that still form a feature of the social life of the winter season in the more primitive districts of the Highlands); "The Standing-Stones of Callanish" (illustrated with a pencil sketch); "A Midnight Intruder" (the nocturnal visitor was a cat); "An Adventure with a Porpoise" (illustrated); "Life at a Lewis Sheiling"; "The Sea-Spirit's Warning." The methods of treatment were as varied as the selection of subjects, but space does not permit of quotation.

THE ORGANISATION OF SECONDARY SCHOOLS.

By J. J. Robinson,
Member of the West Sussex Education Committee.

THE educational necessity of provincial England at the present time is the provision of thoroughly efficient secondary day schools of a high educational type. To-day such schools, although they exist in some populous centres, are much less numerous than they should be, though it is easier to maintain them than any other type of public secondary school. Funds, too, which are available for their provision, are in many counties dissipated in educational activities little creditable to the administrative ability of local education authorities, and where these funds are spent on secondary education, an educationally inefficient type of secondary school is sometimes favoured owing to unfamiliarity with the conditions of the problem. Further, little effort has yet been made to attract the very considerable funds available in fees for the maintenance of an efficient secondary day school.

It is suggested that serious attention should be given to the methods by which local education authorities seek to provide "education other than elementary," and that, where possible, there should be substituted for the unscientific, unintelligent, and wasteful courses now in practice in many counties, an organic system based on a wide survey of the whole question and a careful study of its every detail.

It is clear that until the State, or local education authority, meets the whole cost of education, primary, secondary, technical, and university, the available school life of every child in the country will be determined in the main by the exigencies of its lot outside the school: the position of the parent; the individual aptitude of the child or the plan on which the child's life is being directed by those responsible for it. Any regulation imposed by Whitehall, any action suggested by individual or public opinion, will be ineffective unless it is from the outset adapted to the available school life of the children to be influenced; and it is well to remember that, outside the elementary school which at present ends its work at fourteen, a parent is free to please himself. The entering age and the leaving age of the children available must therefore be kept

always in view. There are, roughly, three quite different groups of children to be considered:

(1) Those who compulsorily enter the elementary school at five and leave it at fourteen to earn money.

(2) Those who, entering preparatory schools or classes at seven, are ready for a public secondary school at ten, and are kept there voluntarily by their parents until seventeen, eighteen, or nineteen, passing thence to the professions, to commerce, or to higher seats of learning.

(3) Between these main groups there are many, but not a great number, who, if they are paid to do so, will continue an elementary-school education, or participate in a secondary-school education, until they are fifteen. If the State still wishes to pay for them, they may go on to a university.

The elementary school, maintained almost entirely by public funds, provides for group 1; the secondary school, properly so called, maintained chiefly by fees or endowments, or by both, for group 2; and a secondary school with a low fee, of the municipal secondary school type, largely rate-maintained, meets the needs of the third group. These are necessarily more closely linked to the elementary school than is a secondary school properly so called; and while they are in some areas of extreme value to the community, it is highly undesirable that they should rank as the only, or even the chief, representative secondary schools of the country. In this connection it may be well to point out that, according to Board of Education statistics, of the pupils attending the State-aided secondary schools more than half have previously attended the elementary school, and about 80 per cent. leave at their fifteenth birthday, facts which are not eloquent of organising capacity.

What, then, are the functions of the secondary school rightly so called?—

(*a*) It has first, and chiefly, to give an efficient general and liberal education to its own group of children who enter it to prepare for the professions, or commerce, intending, maybe, to proceed to higher centres of education.

(*b*) It has also to provide the new atmosphere required for able children from the elementary schools sent to it by an intelligent and paternal State.

(*c*) It has, under the new scheme for the training of teachers, to give their early education to those who may later wish to become instructors in the elementary schools.

Obviously a secondary school which concerns itself mainly with the lesser aims (*b*) and (*c*) will be less satisfactory than one which compasses all three purposes, and chiefly (*a*).

To fulfil these functions the secondary school must be efficient. It will most probably be efficient where it is—

(1) Administered by a body of governors acting under and in accordance with a scheme or other written instrument fixing the type of management, the relations between governors and staff, and generally safeguarding the rank and individuality of the school.

(2) Adequately staffed by teachers who will command the respect and confidence of parents in the districts in which they are working.

(3) Adequately financed, so that adequate ends may be pursued and attained by efficient methods.

These desiderata involve expense, and in the present condition of national and local finance they take the maintenance of the efficient secondary day school out of the reach of the State or of most local education authorities.

It is the purpose of this article to show how this can be established.

A secondary day school of a high type, accommodating at least 200 pupils, cannot be built and equipped for a less sum than between £40 and £50 per school place exclusive of site, and it cannot be maintained for less than £16 per year per pupil for boys; a sum slightly less will be found to cover the cost of maintenance in a girls' school.

1. *Provision.*—It can be provided in the main by a wise use of the customs and excise grants, for, in many cases, probably in most, a school of this type stands first in importance to any area and to any class in any area in the matter of "education other than elementary," and has first claim on these funds. Where these funds cannot be used the capital outlay must be met on the security of rates—a very prudent investment for ratepayers.

2. *Maintenance.*—The Government does not propose to pay this, nor is it possible for the rates to pay it. It need not come out of the rates. It will be found to be generally possible to meet it by the fees of the pupils themselves for whom the school is intended, and by Government grants earned. The fees should not be lower than £12 per year, and the grants, it may be assumed, will generally average £4. These fees parents will gladly pay if they are instructed as to the type of school proposed, and made acquainted with its many advantages. The better the school, the more willingly will they pay the fees. The self-supporting secondary day school, that is, will be and can be independent of rate-aid.

Such a type of school is necessary, and will be both successful and popular. Necessary because it is the keystone of the educational arch; successful, since its maintenance plan (fees plus grants) is capable of many adjustments, and is sufficiently elastic to respond to every adjustment; popular because it attaches the professional and commercial classes everywhere to educational progress, and draws on resources as yet untouched by public bodies interested in this work. Finally, while satisfying its own urgent need, it gratifies, as no other school can, the legitimate aspirations of the democracy, for in no other than a first-class secondary day school of a high educational type can the children of the poorest get the further new and stimulating aid which the State wishes to give them.

THE INTERNATIONAL CONFERENCE ON DRAWING AND ART TEACHING.

By E. M. Carter,
Art Master, Whitgift Grammar School, Croydon.

THE third International Congress for the Development of Drawing and Art Teaching is to be held in London during the early part of August this year, and will be attended by representatives and delegates from all parts of the world, who will bring with them specimens of work done and illustrations of the schemes and methods in use in their respective countries. This conference, which promises to surpass in scope and importance its two predecessors held at Berne in 1904 and at Paris in 1900, was originally intended to take place at the Royal College of Art, placed at the disposal of the committee of the congress by the Board of Education; as, however, the applications for space have already exceeded the limits of the accommodation of that building, it has been found necessary to change the *venue* of the congress to more commodious premises, which are at present under consideration. All that is certain at present, then, is that the congress will meet in London, from August 3rd to 8th, and that the International Exhibition of work will probably be open a few days before the 3rd, and will certainly remain open for some time after August 8th.

An interesting programme of subjects for discussion has been arranged, and papers will be read dealing with drawing and art teaching in all its various phases, from the kindergarten to the schools of arts and crafts. The committee entrusted with the arrangements for the congress, working at first in the face of considerable individual and official indifference and discouragement has at last succeeded in arousing a certain amount of interest in the right quarters, and may now justly congratulate itself on the prospect of its arduous and often thankless labours being brought to a successful issue. It remains for the art teachers of this country to ensure the consummation of these labours by their prompt and generous support, moral and financial, and by the manner in which they will avail themselves of this unique opportunity of comparison of methods and results to set their artistic house in order.

In this connection the congress will perhaps appeal more strongly to teachers of drawing in secondary schools than to any other, by virtue of the fact that their need for enlightenment is probably greater. The march of progress in methods of drawing and of teaching drawing which has taken place of late years is perhaps least apparent in secondary schools; whether this is entirely the fault of the drawing teacher or is due to apathy or lack of sympathy on the part of headmasters, the fact remains that there is still a considerable number of educational establishments where literal effect is given to the advice of Mr. H. G. Wells's scholastic agency young man in "Love and Mr. Lewisham," to the effect that "All you have to do is to give out the copies, and take care that nobody ever sees you draw."

At a meeting held on February 12th at the Mansion House in connection with the congress, Sir Swire Smith remarked, in the course of a spirited address on art and trade:

> For every boy intended for an office, a hundred are intended for crafts and mechanical operations; yet, knowing this, our schools persist in preparing a hundred for the office and one for the crafts. . . . Drawing is the mainspring of a technical education—it is the indispensable language of the craftsman.

The conference will not have been held in vain if one of its results could be to bring home to the headmasters of all secondary schools the fact that drawing is a subject of educational importance which demands to be treated with the same degree of uniformity and continuity as mathematics or classics; that the function of the drawing lesson is to equip a boy with the power to observe keenly, and to record the results of his observation clearly and accurately; and that to attain this end demands a minimum of two hours a week throughout the *whole* of the boy's school career.

An extremely interesting foretaste of the international exhibition has been afforded by the excellent collection of drawings from the schools under the Girls' Public Schools Trust, which were recently on view at South Kensington. The intention of the authorities was so to arrange the drawings as to illustrate the schemes of work in use at the thirty-three schools of the Trust, in accordance with the conditions which will prevail at the congress exhibition. In a great number of cases this was most successfully carried out, though it is to be feared that a spirit of competition, invoked by the offer of prizes, led to the inclusion of a certain amount of "show" work. The desire for novelty in subject and treatment, and the striving after bizarre effects in the rendering of "surface texture," "underlying forms," and so forth, appear in many cases to have obscured the fact that the primary function of the drawing lesson is to teach the child to *draw*. Taken as a whole, however, the exhibition was of very great interest and of the highest educational value; one looks forward with pleasurable anticipation to seeing some of the schemes of work here exemplified (notably such as are in use at Clapham, Dover, Kensington, and Streatham) at the congress exhibition in August for the purpose of comparison with some of the much-vaunted schemes of our foreign contemporaries.

To quote again from the peroration of Sir Swire Smith's admirable address:

> The Art Congress that we are met to promote will give to educational authorities and the public generally an opportunity of assisting in our national stock-taking, and of seeing what other countries are doing. I hope we shall put aside insular prejudice and examine the methods of our neighbours, with a real desire, not only to learn from them all that they can teach us, but to turn the lessons to practical account.

MANUAL INSTRUCTION IN WOOD.[1]

A Course for Secondary Schools.

By J. W. Riley,
Municipal Technical School, Rochdale.

III.

After a first year's course of work the average pupil has acquired a fair knowledge of the methods of handling tools, and has realised many of the difficulties to be overcome. The writer's experience has led to the belief that the second and third year's work ought to include many constructional joints, as a means both of testing the pupil's ability to read a drawing correctly and of working as accurately as possible. The degree of accuracy is, of course, purely relative, and varies according to the character of the measurements. For example, the distance from one town to another will be expressed with sufficient accuracy in miles and approximate fractions of the mile. The width of a street will be sufficiently specified if measured to within an inch; the width of a board with planed edges is measured to the limit of accuracy perceptible to the naked eye; whereas if the diameter of a hair or the thickness of a sheet of paper be required, then special measuring appliances will be necessary. It may be pointed out that the engineer has often to work to the one-thousandth part of an inch. The accuracy attainable in woodwork is necessarily limited, though capable of considerable refinement by experience and training.

Undoubtedly the making of a joint, where first the "trueness" of the material, and secondly the setting out and cutting of several parts of the same dimensions are involved, is a discipline of the greatest value. Increasing importance should be attached to the "trueing-up" of the material at this stage, and in every example the different parts of the joint should be cut with the material in one piece. The success of the results may be judged by the nicety with which the parts fit each other. No paring or special fitting should be required, and on no account must the work be smoothed off.

[1] The second article appeared in The School World, March, 1908.

Fig. 17 illustrates a dovetail half-lap joint. In making it four different measurements in each part must correspond. It will be seen that both parts of the joint are of the same width and thickness to enable the cutting of the different parts to be done whilst in one piece. By finishing off the ends of the different parts as shown, additional practice in paring and finishing across the grain is obtained.

In the taper-holder (Fig. 18) the drawings show half the front elevation (the other half is symmetrical with it) and an end elevation. The size only of the back-piece is given, the pupil providing the design. The new work in this exercise consists in fastening two pieces together at an obtuse angle (glue and nails being used) and in the preparation of the moulded support.

Fig. 19 is a drawing, in plan and section, of a pin-tray. A simple geometrical design in the middle—executed in two or more kinds of hardwood—affords opportunity for inlaying, and of obtaining a knowledge of the working of hardwood. With a base of satin walnut half an inch thick, and the inlaid pieces of half that thickness and consisting of walnut and sycamore or of similar varied hardwoods, an effective result is obtained. The corner joints of the surrounding ledges are mitred. The best pupils may adopt a polygonal shape instead of a square one; while the inlaid design may be left to individual taste.

The bridle joint (Fig. 20), preferably of red deal, could be made from a rough dimensioned

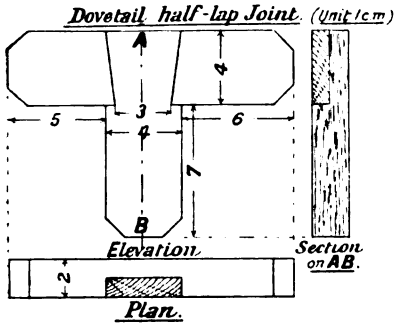


Fig. 17.

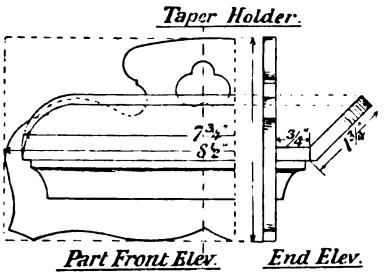


Fig. 18.

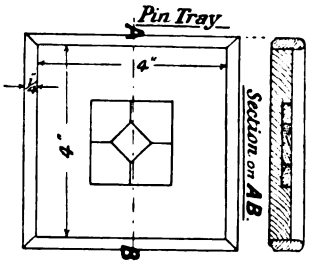


Fig. 19.

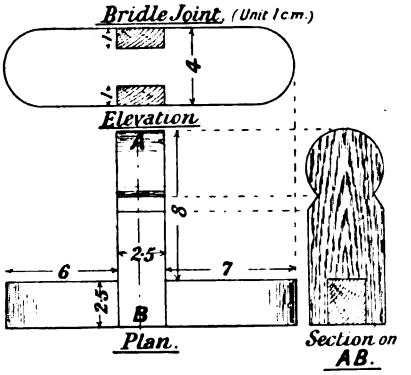


Fig. 20.

sketch prepared by the pupil. It gives good practice to allow this to be done, the pupil drawing the joint in plan, elevation, and section after the model is completed. Should any deviation from the dimensioned sketch occur in the work, this should be shown in the drawing.

The next model (Fig. 21) is designed as a frame for a photograph or picture postcard. The material may be basswood, satin walnut, or any hardwood. The shape of the opening may be rectangular with rounded corners, or, preferably, elliptical. If the latter shape be adopted, the different methods of constructing the ellipse

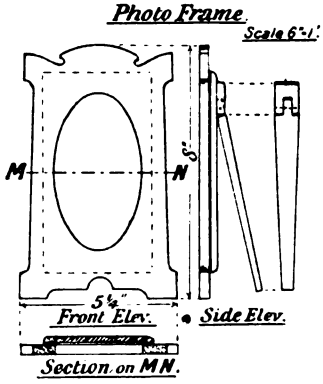


Fig. 21.

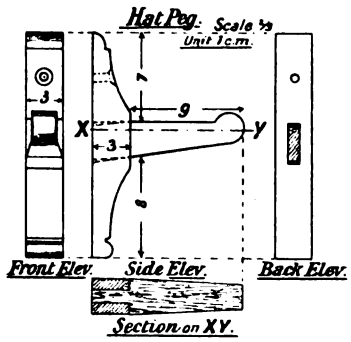


Fig. 22.

will necessarily be explained. The back support involves the construction of a small angle bridle joint, a piece of thin wire passing through the two parts making it into a hinge.

Fig. 22 shows the projections of a model specially intended as an example of a mortise and tenon joint, and serving—when completed in the manner shown—as a hat peg. This model, like

A small easel, made from several pieces, is shown in Fig. 23. It involves the planing of several pieces to the same dimensions. The shape of the upper ends of the laths may be varied. The way in which the back support is arranged as a hinge and fixed to the cross ledge serves to illustrate mortise and tenon joints.

The next exercise, the puzzle dovetail joint

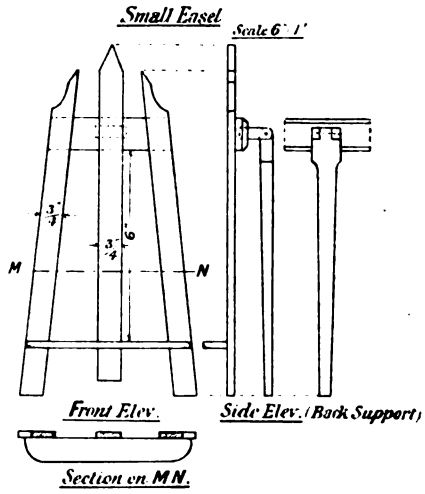


Fig. 23.

(Fig. 24), is undoubtedly a severe test of accuracy of working. To the uninitiated the making and putting together of such a joint would appear impossible. It is only by having a definite ratio between the sizes of the different parts that it can be put together. It is well to use fairly hard wood, and, as in all the preceding joints, the different parts must be cut whilst in

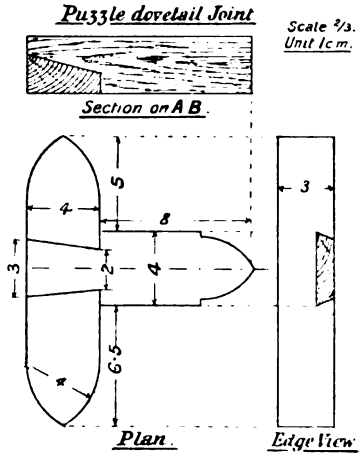


Fig. 24.

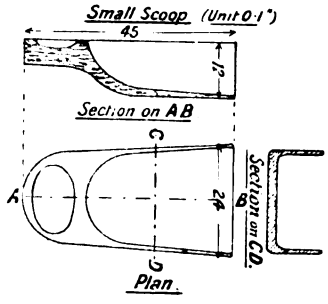


Fig. 25.

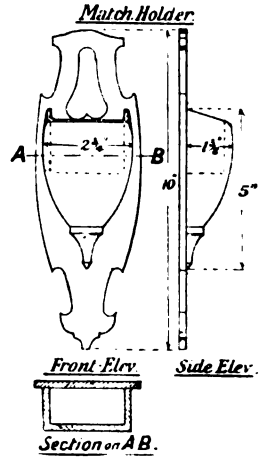


Fig. 26.

all the joints, is worked in one piece; the sides and shoulders of the tenon are to be left from the saw, and the new work consists of making the rectangular hole (the mortise) into which the tenon fits. The different kinds of mortise and tenon joints in general use and the methods of fastening them together with wedges and pins can here be explained.

one piece, no paring nor smoothing off being allowed.

The scoop (Fig. 25), drawn in plan and two sections, is essentially a shaping or modelling exercise in which curved surfaces predominate. It provides good practice for the gouge.

The match-holder (Fig. 26), the design for the back of which is left to individual fancy, consists

of a solid block of wood cut and shaped as shown in the drawing, and fastened with screws to a thin back-piece. The shaping of the front block provides good practice in vertical paring with both chisel and gouge.

The writer has found that the above examples provide a satisfactory second year's course of work if taken in the order indicated.

The remaining illustrations outline a third year's course. The pin-tray (Fig. 27) is made out of satin walnut. It is a still more difficult example of shaping or modelling in wood. For

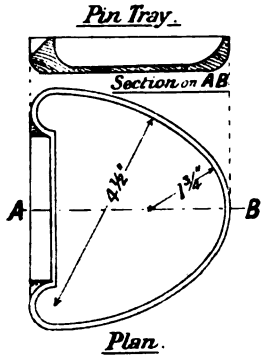


FIG. 27.

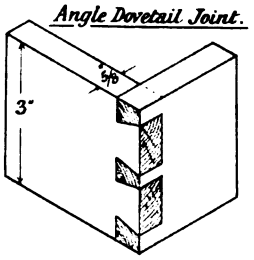


FIG. 28.

good results a very careful manipulation of the gouge is necessary. To obtain uniform hollowing-out it is necessary to make and use a template of the required curvature.

By reason of the necessary duplication of measurements the angle dovetail joint (Fig. 28) is an excellent test of accurate working.

The try-square (Fig. 29) is made from three different kinds of wood. The larger piece of the

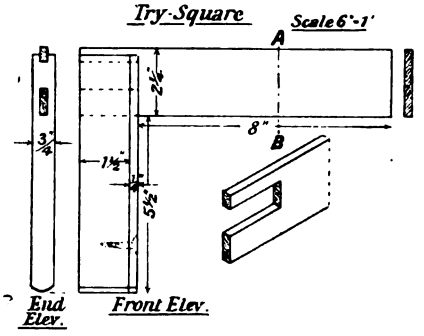


FIG. 29.

stock is basswood; upon the inner edge is glued a strip of walnut; and the blade is of either oak or beech. The stock and blade are joined together with a mortise and tenon joint which is glued and wedged.

The watch-stand (Fig. 30) is made out of either mahogany, satin walnut, or other hardwood. It will be seen that the unit for this drawing is 0·25 inch. The geometrical design is inlaid for half the thickness and needs care, but is not beyond the ability of the average pupil at this stage. The inlaid design may be left to individual taste. When the design shown in this drawing is adopted, the work of inlaying can be reduced by glueing two strips of different

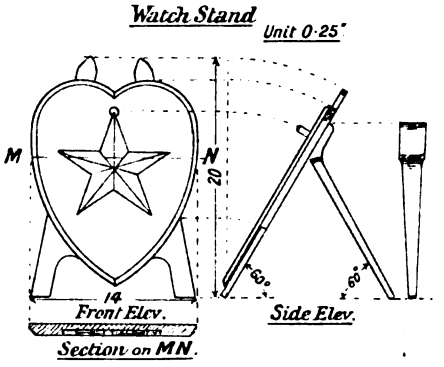


FIG. 30.

wood together, and, after the glue has set, fitting two pieces at one time.

Fig. 31 shows a joint in which the corners

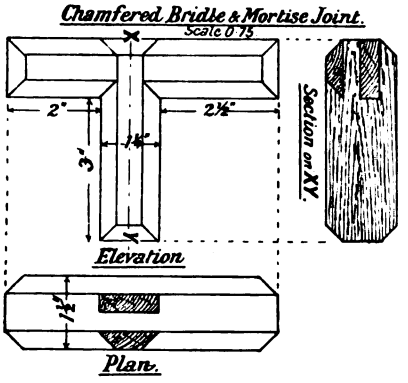


FIG. 31.

are chamfered; it is introduced as a more difficult test exercise than any of the preceding.

The nut-cracker (Fig. 32) consists of two parts

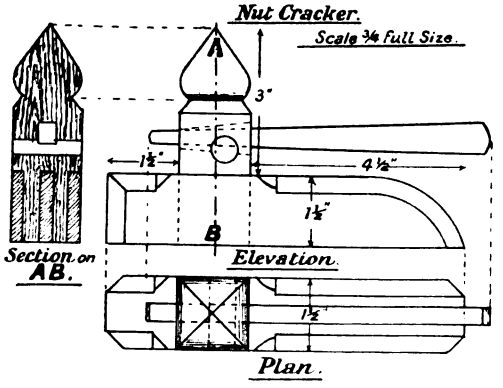


FIG. 32.

fastened together with a double mortise and tenon joint, and a third piece of hardwood which acts as the lever.

The glove-box (Fig. 33) may have dovetail joints at the corners, or they may be tongued and grooved as shown in the drawing. The lid has a geometrical inlaid design. Each pupil may

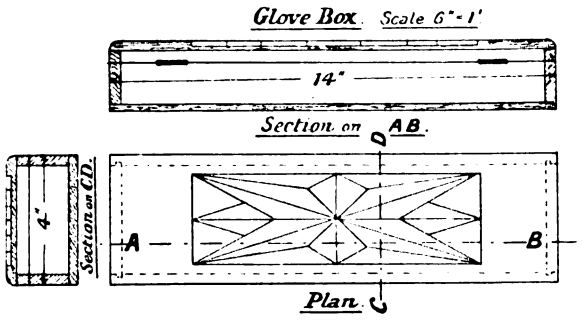


Fig. 33.

work out his own design for inlaying. The hinging of the lids is an interesting piece of work.

Fig. 34 shows an oblique half-lap joint some-

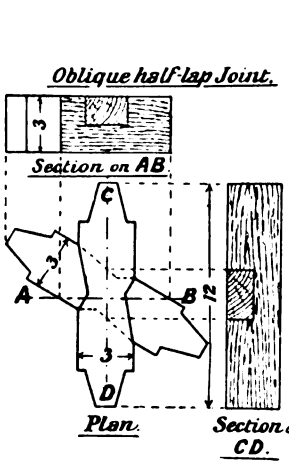


Fig 34.

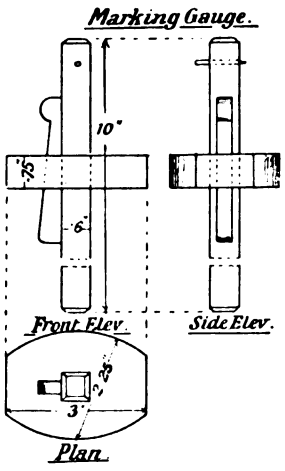


Fig. 35.

what difficult to make. When made in one piece it severely taxes the ability of the pupil.

The marking-gauge (Fig. 35) is made out of

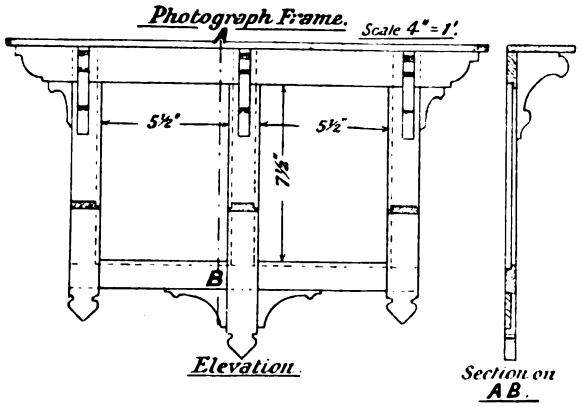


Fig. 36.

beech, and is a useful tool which each pupil ought to be able to manage by this time.

The photograph frame (Fig. 36) involves several joints: rebating for the glass, and variety in paring and shaping. It gives the pupil some idea of the difficulties to be encountered in the framing of a piece of work consisting of several parts.

After the initial stages of the work, each pupil is allowed to proceed according to his ability, and naturally some make more rapid progress than others. In working through the course opportunity is taken to point out errors of tool manipulation, the relation of the drawing to the benchwork, and the elements of good design; and an attempt is made to impart a knowledge of the materials and their limitations. An essential point throughout has been to try to obtain good educational results with economy of material.

Although many advocates of manual instruction favour communal work in the later stages, it is doubtful, in the writer's experience, whether complete success can be obtained by having several pupils engaged upon the same piece of work. It has been urged for manual instruction in wood that it allows pupils to make apparatus for other classes. Although this may be done to a limited extent, the difficulty is so to grade such work that it is constantly progressive; more often than not the attempt results in a tedious repetition of the same work, or it involves something beyond the ability of the pupil.

Such a course of practical training as is outlined in this and the two previous articles, interspersed, as it necessarily is, with the associated theory, may, it is hoped, tend to show the value of the work, and prove helpful to those engaged in it.

SOME NEW WALL-MAPS.[1]

In the latest of Philips' "Comparative Series of Large Schoolroom Maps," the publishers really do give a lot for the money. We have seldom seen a more comprehensive sheet. To begin with, Australia is shown on a scale of 48 miles to the inch. New Guinea and Tasmania are inserted on the same scale in their appropriate corners. A third inset shows a diagrammatic section across S.E. Australia from Cape Howe to the Musgrave Range (north-west of Lake Eyre), with the horizontal scale as in the map, and the vertical exaggerated fifty times. A portion of the British Isles is included as a fourth and final inset, and as a useful reminder of size much more convincing to the eye than any number of scales. The colouring in familiar browns, greens, and blues shows primarily the great physical features, but political geography is, so to say, superimposed by means of red for boundaries and towns, and black for railway and steamer routes. Names are there, but they are not overcrowded. "Nothing unnecessary has been inserted and nothing necessary omitted" is the proud boast

[1] "The Commonwealth of Australia." (Philip.) Size 70×45 inches. Scale 1 : 3,000,000. 14s.
"Philips' Imperial Series of Maps." 2s. 6d. and 3s. 6d. each.
"Maps of India." (W. and A. K. Johnston.) Size 50×42 inches. 12s. each.
"Physical Test Maps." (W. and A. K. Johnston.) 1d. each.

of the publishers, as to which one is inclined to insinuate that it is always rash to predicate a negative and *quot homines, tot sententiae.* However, we will admit with pleasure that the *essentials* are there. The *effectiveness* of the map appears from the boldness with which the salient features of Australia's physical geography stand out, such, for example, as the shallowness of the sea in Bass Strait, in the Gulf of Carpentaria and the Timor Sea, the magnitude of the Murray basin, the narrowness of the eastern ridge, and the irruption of elevated land from the south-west far into the interior of the central plateau. Up-to-dateness is guaranteed from a glance at the Westralian railways, which are shown stretching far away from the coast, from Geraldton to Nannine on the Murchison goldfield, and from Perth to Leonora and Laverton between the Coolgardie and Mount Margaret goldfields. We are glad to recommend this map, and the whole series, for any schools and for any part of the school.

The same firm has also just produced two new maps in their "Imperial Series": (i) "The Polar Regions," with smaller isothermal and ocean-temperature maps; (ii) "The World's Physical Features," with sections along various latitudes, and three maps on the equal-area projection showing winds and barometric pressure, annual rainfall, and regional vegetation. These may be obtained either in sheet form (2*s.* 6*d.*), or varnished and on rollers (3*s.* 6*d.*). They are excellently turned out.

We have seen three sheets of India published by Messrs. Johnston. That which we consider the most important, viz., the Bathy-orographical Map, on a scale of 1 : 3,000,000, is a bold and clear production, printed in greens, browns, and blues, with few but distinct names. Placed on the wall or hung over the blackboard, it emphasises to the dullest in the class the main features of India—the highlands of the Himalaya and Tibet and Afghanistan frontiers, the plains of Indus and Ganges, the plateau of the Deccan. Burma is rather shabbily treated, and is more than half cut off. With the map is given a Handbook (6*d.*, if ordered by itself), the thirty pages of which are devoted to an explanation of the map, its salient features and the consequences thereof. Some notes are added on the monsoons and the country's industries in relation to the physical geography, and these are very useful and in great detail. In the absence of a summary this wealth of detail is apt to be confusing to all but the teacher who has made a special study of India.

The two other sheets each contain four special maps which are of somewhat unequal merit. Sheet I. has two excellent representations of political divisions and density of population—clear, bright, and conveying their information on their face. The others—railways and canals, and industries—fail by contrast. They are intricate; the railways are marked according to gauge, and the canals actually show whether they are for irrigation or navigation, or both. They are confusing, too; the multiplicity of signs requisite for the different industries takes more working out than a class, *qua* class, is capable of. Sheet II. has three capital maps of Forest Lands, Agriculture, and Climate. The fourth, Minerals, is not satisfactory. It is also intricate and confusing. Moreover, the importance of this or that deposit cannot be measured by mere numbers. Four-fifths of India's coal comes from the region of which Raniganj is a centre, and yet this region only appears as one coalfield amongst many on the map. We question, too, whether diamonds now are worth chronicling at all as an Indian product, and whether the coast production of salt should not be emphasised instead of being practically ignored.

Messrs. Johnston have also produced some beautiful test maps at 1*d.* each. These are really miniatures of the bathy-orographical series, of which India is noticed above. The idea is that the pupil adds the names to his test map as he progresses with his study of the country. The only criticism we have to make is that some of the maps—especially those relating to the British Isles—are too complicated, and all of them are too pretty for the ordinary boy to mark. He might use them by way of copy or example, for which they cannot be overpraised, or he might use them for oral revision. But unless he be a boy of remarkable acuteness and aptitude—*i.e.*, no ordinary boy—he should keep his fingers, or at all events his pen, off them. That they are cheap does not alter our opinion.

LORD ACTON'S ESSAYS.[1]

IN 1906 we welcomed an edition of the "Lectures on Modern History" which Lord Acton gave in the University of Cambridge. Now the same editors give us two volumes of essays and studies by the same author. They are all reprints with the exception of the last in point of date, a discussion of the causes of the Franco-Prussian War of 1870 given to a private society at Cambridge. They have been selected from the columns of the *Rambler,* of which Acton was editor 1858–62; of the *Home and Foreign Review,* which he founded in 1862, edited, and concluded in 1864; of the *Bridgnorth Journal,* which reported lectures given to an institution in that town; of the *English Historical* and other reviews. Besides these selections, the editors give us a portrait of their author, a short date list of his life, and an introductory essay on his life-work, based partly on unedited letters and private information. There is also a good index to each volume.

The three volumes which we now possess will serve as materials for the life of Lord Acton. Dr. Gasquet has given us also a volume to the same purpose, and thus gradually we shall come to have an idea of the man and his work.

1 "The History of Freedom and other Essays." By (the late) Lord Acton. Edited with an Introduction by J. N. Figgis and R. V. Laurence. xxxix+638 pp. (Macmillan.) 10*s.* net.
"Historical Essays and Studies." By (the late) Lord Acton. Edited by J. N. Figgis and R. V. Laurence. 544 pp. (Macmillan.) 10*s.* net.

As we read these amazing volumes, we are reminded of our experience of Mont Blanc. For a time we stayed under its shadow in Chamonix. But we got to know more of it as we travelled away from it towards Geneva. At each new glimpse backwards the mountain revealed itself more and more, towering above the lesser heights, and we could learn something of its outlines. So with Lord Acton. From the years of his earliest manhood he was studying European history in its original sources. By the circumstances of his birth and training he was cosmopolitan. While from books, and much more from manuscripts, he became familiar with all periods of the past, he learned from acquaintance with statesmen the intimate history of his own times. And this wealth of learning he used in whatever he undertook to write or to speak. The average reader will be overwhelmed by these volumes. Even his editors speak of his "more than Teutonic allusiveness." Some of the articles, however, tell a story. The lecture at Bridgnorth on the career of Maximilian in Mexico in the sixties, the story of Charles II.'s eldest illegitimate child, the account of the Vatican Council of 1870, which, however, breaks off abruptly, the lecture on the Franco-Prussian War of 1870–1, and the article on Wolsey are such. But the greater part of these volumes are essays and reviews, giving opinions on matters not fully explained, ranging from "freedom in antiquity" to the development of historical studies in Germany.

We would speak with diffidence of what we have learnt from these volumes. But we seem to see a man brought up in the (Roman) Catholic Church, remaining to the end a devout believer in its religious dogmas, yet with a passionate zeal for historical truth as against those who would think that Church better buttressed by obscurantism and denial of obvious facts. He had also a high moral code, which he applied to all persons of every age. Neither Popes, Kings, nor democracies were, in his mind, excused for what would be regarded in private persons as murder and fraud. Against certain modern developments of the Papacy he, with his teacher, Döllinger, struggled hard, especially against the definition in 1870 of the dogma of Papal Infallibility. One of the articles here reprinted, on the Vatican Council, is therefore a bit of original history, supplied by an actor in and eye-witness of what he tells. He was opposed to all absolutism, whether in Church or State; he believed in liberty in the old Liberal sense of that word, and his intention was to write a history of it, though he at one time remarks that it scarcely ever existed.

These and many other illuminating ideas may be gathered by those who will have patience to read through these volumes. For the rest of us, we must be content to wait until those who know will give us a "life" of the historian-philosopher whose career was itself so great a part, though unknown to most of us, of the history of the nineteenth century.

PRIMARY-SCHOOL TEACHERS IN FRANCE.[1]

THIS volume contains four interesting reports: Curricula of French Higher Primary Schools; Life in a French Higher Primary School; Summary of the Official Regulations affecting the Training and Position of Teachers in State Primary Schools in France; The French Training College System. All the reports are interesting, and that of Mr. Saville, who lived and taught in a French higher primary school, forms especially good reading. It gives a graphic picture of the conditions under which many French boys, who are destined to become elementary-school teachers, pass their most impressionable years. It may be well to give briefly the scheme of education which obtains for these teachers. They pass from the *école maternelle* or *classe enfantine* to the elementary school at the age of six: they then visit the higher elementary school, passing from it to the training college at the (minimum) age of sixteen. After two or three years at the training college they begin probationary service, and become fully certificated one or two years later in full possession of numerous diplomas. The ultimate salary which they command is 2,200 francs in the case of men, 2,000 francs in the case of women, with supplementary allowances for those who act as *directors* or *directresses*, and for lodging; the actual amount of salary received being liable to a reduction for superannuation purposes.

Mr. Saville's report deals with the time when these intending teachers are passing through the higher primary school. After describing the routine of the day, which was most exacting, and included no less than five and a half hours' preparation on Sundays, he sums up:

> If, however, one were to ask whether the education received made "men" of the boys, whether it was a stimulus to a boy's moral life, it must be confessed that it is very largely a failure. Life in a higher primary school is monotonous and barren. The day is too long and too crowded with classes and preparation. There is no time for healthy exercise, for the outlet of animal spirits. The boys see the masters during class-time; for the remainder of the day they are under the incessant supervision of the *surveillant*.

Conditions in the training colleges are no less severe (p. 175) and must tend to produce teachers of an artificial type, likely to work as capable machines for a limited time, but hardly possessed of the initiative and energy which should be the inheritance of the teacher in the widest sense.

That the system is not quite perfection may indeed be gathered from the difficulty which is found in recruiting a sufficient number of candidates:

> In Lyons a few years ago the number of candidates was so small that the authorities were obliged to take the rejected from neighbouring districts. And it became a

[1] The Education and Training of the French Primary-school Teacher. Special Reports on Educational Subjects, vol. xviii. v + 222 pp. (Wyman.) 1s.

matter of general comment in the *écoles primaires supérieures* that the pupils who competed for entrance to the training college were the worst—those who failed to gain openings elsewhere.

The information which is supplied about practising schools, model lessons, and other details of training cannot fail to be of interest to English teachers; but it is impossible to read the reports without forming a strong opinion that the French system, taken as a whole, has many blemishes, and that the English primary-school teacher would not care to exchange his position for that of his French colleague. From the French secondary system we have much to learn; but as regards primary education, the balance seems to be all in favour of this country.

BIBLE TEXT-BOOKS.[1]

MISS KNOX'S book on Exodus follows the lines of her previous book on Genesis. It is a book for teachers. She keeps clear alike of all critical questions and of that forced method which seeks in every Old Testament figure and ordinance a type of Christ and Christian doctrine. Her treatment is narrative and ethical, and that is the right treatment for schools. This volume, like its predecessor, is simple, practical, and helpful. Canon Glazebrook's Bible lessons are already well known and widely used. In the present book the lessons of the former edition are shortened and simplified; several maps are added; the notes are fuller than in the early edition; each lesson has an outline with blackboard headings, and there is well-chosen illustrative matter. The only thing one still desiderates is the text of the Revised Version. Canon Glazebrook does not obtrude the critical difficulties, but neither does he burke them; the teacher will find in his short exposition enough, at any rate, to give him his bearings in attacking the voluminous work of the higher critics. The treatment of Pharaoh's overthrow in the Red Sea, for instance (vol. ii., p. 91), is eminently sane, and the suggested parallel of King John's overthrow in the Wash gives the touch of actuality to the story. So long as we speak of rising walls of water on either side in the Scripture lesson, and then demonstrate, in the physics lesson, that water seeks its own level, we are sowing the seeds of future puzzlement and scepticism in the adolescent mind. Dr. Barnes's edition of Kings shows the same enlightened attitude; he brings out clearly the contrast between the two narratives of Kings and Chronicles, and he distinguishes frankly between the two elements of history and story in the books of Kings themselves.

The edition of Ezra, Nehemiah, and Esther is of a different order; it is what one may call an examination book. The edition of the Acts of the Apostles by Messrs. Reynolds and Walpole is slight and disappointing. For instance, when St. Paul told the Athenians that "God dwelleth not in temples made with hands," and "We ought not to think that the Godhead is like unto gold, or silver, or stone, graven by art and man's desire," he had right before his eyes the finest temples man ever reared, and the most perfect statues ever conceived or carved by human skill; but there is no hint of this in the edition that lies before us. Again, in discussing the choice of St. Matthias, we are told: "In the Old Testament God allowed casting of lots because it was an appeal to Him. Nowadays it is generally wicked because it is an appeal to chance. At times even now it is necessary, *e.g.*, amongst soldiers, as to who shall go on a dangerous mission." One cannot help asking in surprise two questions. First, are we to believe that wickedness was once right? and, secondly, is wickedness ever necessary? Who steals this book steals a Shakespearean purse. It darkens counsel.

"The Beginnings of the Church of Christ" is written for children of the Church under the auspices of the Society of the Catechism; it is for children to read themselves, and in it they will read how the book of Acts proves that the Communion must be taken fasting, and the gift of the Holy Ghost is conferred through the laying-on of the hands of a Bishop; but "Priests and Deacons have no authority to give this gift—only the Bishops have it" (p. 100).

[1] "Bible Lessons for Schools: Exodus." By E. M. Knox. 214 pp. (Macmillan.) 1*s.* 6*d.*
"Bible Lessons for the Young." By Canon M. G. Glazebrook. Vol. i., Text, Maps. 240 pp. 2*s.* 6*d.* Vol. ii., Notes and Outline Lessons. 420 pp. 3*s.* 6*d.* 2 vols. bound together, 4*s.* 6*d.* (Rivingtons.)
"Cambridge Bible for Schools." Kings i. and ii. By Rev. Dr. W. E. Barnes. Maps. 330 pp. (Cambridge University Press.) 3*s.* 6*d.*
"Ezra, Nehemiah, and Esther." By Geo. Carter. Map 116 pp. (Relfe.) 1*s.* 6*d.*
"Handbook to the Acts of the Apostles." By Rev. Bernard Reynolds and Rev. Dr. G. H. S. Walpole. Part i., chaps. i.-xv., map. 136 pp. 2*s.* 6*d.* net. Part ii., chaps. xvi.-xxviii., map. 100 pp. 2*s.* net. (Rivingtons.)
"The Beginnings of the Church of Christ." By G. P. Trevelyan and E. A. Edghill. 124 pp. (Rivingtons.) 8*d.* net.

METHODS OF APPROACH IN GEOGRAPHICAL INSTRUCTION.[1]

By George G. Chisholm, M.A., B.Sc.
Lecturer in Geography in the University of Edinburgh.

I am going to begin, like Euclid, with two or three postulates, or perhaps I had better say with one postulate and two corollaries. My postulate is that if we are to learn the best method of approach we must know where we want to arrive. My corollaries are, first, that in the present case that implies that we must know what geography is, and, second, that we must recognise geography as a subject having a different field from every other the domain of which is clearly marked out. The definition of geography to which I still adhere is that for which I was jointly responsible in the "Syllabuses of Instruction in Geography" issued four or five years ago by the Royal Geographical Society, namely, that the function of geography is to estimate the influences on man of terrestrial local conditions and place relations. Amongst terrestrial place relations I include, of course, the relation of the earth as a whole and parts of the earth's surface to the sun and moon.

[1] From a lecture delivered before the Geographical Association.

Now, if this definition of geography be accepted, it follows, first, that no mere enumeration of facts relating to different regions of the globe, however interesting in themselves, can be considered as geographical teaching, and, secondly, that the teaching of geography must be truly educational, must involve a training of the understanding. It would, indeed, be absurd to contend that there is any means of doing without the learning of a great many facts, both geographical and non-geographical, in the learning of geography; but it seems to me that it is the business of the teacher to be guided in his selection of the facts that have to be driven home most earnestly by the idea I have above indicated, that ultimately the child or student is to be brought to understand the complicated ways in which local conditions and place relations influence human activity, and that he will try to get the child's mind to work in that direction as early as possible.

That raises two questions: first, what are the most important facts to grasp? and, secondly, of those facts, which are those that may be assumed as known or can be more or less adequately imparted at the earliest stage at which it is possible to get children to think geographically? As to the facts, I would place first in importance, and almost equal in that respect, the character of the physical features and the character of the climate, subjects that will be more fully dealt with in Lectures V., II., and III. of this series. Now, are there any ways of getting the child to understand the geographical importance of these considerations without his even knowing that that is what he is being taught? I think there are. Many non-geographical facts which have to be constantly applied in geography are such as come or may be brought under the observation of young children.

Here I find myself in two or three dilemmas. First, I am already responsible for the treatment of this subject in a small pamphlet which is no doubt known to some of you, and is easily accessible to all of you. I mean the "Syllabuses of Instruction in Geography," already referred to, issued by the Royal Geographical Society. Now if I had changed my mind since the date of those syllabuses it would be natural and proper for me to say something different on the present occasion. But I have again carefully read over all that is contained in those syllabuses, so far as they relate to what may be called the method of approach in the teaching of geography, and have discovered that I am still of the same mind. So, what can I do but repeat myself? Still, there may be an advantage in that. Browning, we are told, said, after the publication of "The Ring and the Book," that he had at last got the English public to listen to him by telling the same story twelve times over. Why, then, should not I, in the hope of getting a small fraction of the British public to listen to me, say the same thing twice over? But in doing so I will at least endeavour to imitate Browning in varying my manner of saying it.

On this occasion I will venture to vary my treatment of the subject by giving some more detailed suggestions as to how to impart the ideas which, as is contended in those syllabuses, it should be quite easy to get into the minds of children even under eleven—ideas as to direction, differences in elevation and slope, differences in temperature and rainfall and in the effects of winds, the rise and fall in the level of streams, the differences between winter and summer and their relation to vegetation, the interchange of commodities, the hindrances to communication by land and water, and the natural and artificial facilities for communication.

I have said that I attach chief importance to the physical features and climate. Exercises suited to train children to understand the importance of physical features can be given only with the aid of good maps, and the use of these does not belong to the earlier stages of geographical teaching. At these stages all that can be done, it seems to me, is to direct the child's attention to what he can see for himself in his own neighbourhood, and what can be shown to him by means of pictures.

But it is probably in connection with climate that still more occupation of a fruitful kind will be found for young children. I take it for granted that every school has an outside thermometer that young children can look at. It may have a barometer, too, but if so I hope it will be hung up out of reach of young children's observation, for I do not know anything that young children can learn from its readings. The thermometer, however, is essential. I would have every child that is learning geography, even before the age of eleven, read for himself the thermometer every day at the same hour, and note down the reading in an exercise-book,[1] and after that, in parallel columns, the direction of the wind and the character of the weather, also as observed by himself. Rain-gauge observations are impracticable for the children, but may be demonstrated by the teacher. In the weather column, however, the child might be taught to insert nearly all the descriptive epithets for which there are abbreviations in the daily weather charts—blue sky, overcast, sky partly clouded, rain, drizzling rain, fog, gloomy, hazy, snow, hoar frost. This would be a first-rate training in accurate expression combined with observation. I admit that it is impossible to ensure independence of observation on the part of the children. They will consult each other, and some will even put down what they are told by other boys. Still, so far as this method does tend to the promotion of independent observation, it is something to the good. Even if the geography class meets only twice a week I would have these observations recorded in the exercise-books for every school day. After each column for the child's own observations I would have a blank column left for corrections in class. Now surely it is obvious that here we have a great deal of material for thoroughly educational class-work. The children's observations have to be compared and corrected, those who have put down wrong observations being led, so far as possible, to see their errors. Each week the children may be required to summarise their observations, noting, for example, the ups and downs of temperature and the corresponding direction of the wind, the occurrence of rain and wind direction, and the like. They may thus see for themselves that at all periods of the year changes in temperature do occur from day to day, and their weekly (and monthly) summaries will enable them to count the number of times in which a rise of temperature is associated with a wind blowing in one direction, a fall with a wind blowing in another direction.

I have no time to dwell further on the way in which the available time may be best occupied at this stage. I believe I have indicated the most important ways of occupying it. When the boy is familiar with all the ideas above referred to as within his range at this stage, he is ready, I think, to go on to the consideration of the world as a

[1] In the course of some remarks made after the reading of this paper, Mr. Ernest Young, B.Sc., Headmaster, Lower School of John Lyon, Harrow, objected that the keeping and due supervision of such exercise-books was attended with great difficulties, and contended that the plan adopted in his school of entering such data as those referred to in my paper on a chart in the schoolroom large enough to be read by all the children and to serve for the whole year was a better one. I gladly take this opportunity of saying that I agree with this. The essential thing is that the children should be steadily and methodically taught to observe for themselves and to connect their observations, so far as possible, with one another.

whole. He must then be told that the world is round, and that therefore it can be adequately represented only by a globe. He is quite capable of understanding the demonstration of this by the inevitable crumpling of a sheet of paper applied to the surface of a globe, and also of perceiving that there is very little crumpling of a piece of paper cut small enough just to cover the British Isles on the scale of the globe. The rotation of the earth on its axis will also be illustrated, and this will enable the boys and girls to learn the meaning of the poles, the equator, and the meridians. They can also have pointed out to them that portion of the earth's surface within which the sun may be seen directly overhead some time every year.

With this knowledge they are ready to apply to the geography of the world one important fact with which their previous training has made them familiar. They are ready to understand that there are parts of the world with perpetual summer, and it should not be difficult to get them to understand that there are various degrees of difference between the climate of our own country and those of other parts of the world, and that these differences are somehow connected with differences in position on the globe. I understand that in some schools it is the practice to base much of the geographical teaching on illustrations of differences in the customs and manner of life in different parts of the world. This practice, it seems to me, has much to recommend it, provided that care be taken to show how the differences in question are connected with geographical differences, that is, differences in local conditions and place relations, and that it is not a mere heap of heterogeneous ethnographical information. If the practice can be followed with advantage, it seems to me that it is at this stage that it should be introduced, and in direct connection with the differences of climate depending, among other things, on perpetual or prolonged and very warm summers, or very short and cool summers, and these again on differences in the height of the sun. Such teaching, to be truly geographical, will best be given in connection with a study of the conditions under which some of the more important commodities, such as wheat, maize, rice, grapes, cotton, wool, silk, rubber, &c., are produced.

But in any case such teaching cannot be held to dispense with the necessity for some elementary study of the continents and oceans, as introductory to a more minute study of countries.

This elementary study will not include much detail. It will be intended to lead to the acquisition of broad but accurate ideas as to extent, relative situation, the character of the physical features and climate, and the situation of the chief towns. The children will learn the fact, but no explanation of the fact of the prevalence of low mean temperatures at high altitudes. They will be told facts as to the situation of the chief towns, but no attempt will be made to explain their situation, still less the importance due to that situation. This last point will be left for the very latest stages, and will never be reached at all unless a very methodical course of geographical teaching is followed throughout. But though no attempt will be made to bring home such explanations to the minds of the children, the facts as to the situation of towns will be so stated as to prepare for the explanation when the child's mind is at the stage at which it is capable of apprehending it. Towns will be mentioned as seaports or on great navigable rivers, but always with reference to the nearest populous areas, and in some cases the populous area may be all that there is to mention. One town may be a seaport at the mouth of a navigable river flowing through a very populous valley; another on a natural harbour near the most populous part of the country to which the town belongs. At a later stage it might be necessary to add, with regard to this town, that the harbour is the only one from which a railway runs across mountains to a productive region behind the mountains. Another town may be described simply as in the middle of a large and very populous plain, and so on.

Now I may be told that in recommending this method of approach I am departing from the ideal that is so generally held up to us at present in the teaching of geography, to which I have myself given countenance in an earlier part of this address, the ideal, namely, that geography should always be taught in such a manner as to make it truly educational by training the thinking powers of the child. This method, it will be said, is one of mere drudgery. But I am not at all disturbed by this objection. There is much use in drudgery. If, therefore, there is some drudgery in the learning of geography, I see no harm in it, any more than I see harm in the drudgery of learning the multiplication table.

But if it be further objected that my method of approach at this stage gives no opportunity for interesting the child and training his thinking powers, that I deny, and deny most emphatically. An absolutely necessary complement of the teaching of geography at this stage, and one that will require a good deal of time and patience, is getting the children to perceive the particular implications of broad statements, enabling them to apply broad statements when required to individual instances. I would say, then, at this stage let there be endless patience in setting children to work syllogisms of this type:

All the north-east of Australia has warm rainy summers. Brisbane is in the north-east of Australia. Therefore, Brisbane has warm rainy summers.

All that part of India that lies behind the Western Ghâts can be reached from the seaboard only by roads or railways that rise to about 2,000 feet or more above sea-level. Poona is in that part of India. Therefore, Poona, &c.

All land that has a very small rainfall must get water from rivers or some other source if it is to grow any crops. Egypt is a country with little or no rain. Therefore, Egypt, &c.

I do not say that this is to be done in this formal way for children. But do this in effect, and it will account for the useful occupation of much school time in the teaching of geography. I have laboured this point, but I make no apology, for I look upon it as of the utmost importance.

This stage being passed, boys and girls are ready to enter upon a more detailed study of countries, and to take up the consideration of non-geographical facts of a more advanced kind than have hitherto been dealt with.

Children will now learn the meaning and use of maps. We may congratulate ourselves on the fact that Ordnance survey maps can now be had at a price that makes it possible for any child of suitable age to have one of his own district in his own possession, but I cannot help adding an expression of regret that these maps have the contour lines (at least in many if not in all cases) so faintly drawn that their utility for teaching is greatly diminished. Teachers will note that questions of very various degrees of difficulty may be based on Ordnance survey maps, and many may be framed of a type so easy that boys of eleven or twelve might fairly be expected to answer them, though this is one of the points on which

I shall gladly accept correction from those who have more experience than I. For examples of the kind of questions that may be asked it is enough to refer to the admirable chapters iii. and iv. in the "Introduction to Practical Geography," by Simmons and Richardson.

Our own country offers excellent opportunities for leading children up to an understanding of some of the principal facts of climate, in connection with various facts, both geographical and non-geographical, new to the children. At an earlier stage attention has been directed to the position of the country in latitude, and the effect that this may be expected to have on temperature. Now attention will be drawn to the position of this country with reference to the Atlantic Ocean, and emphasis laid on the side of the ocean to which it belongs. Opportunity will, of course, be taken to bring out what is distinctive in the British climate in contrast with that of other parts of Europe. Concurrently, it seems to me, exercises should be given on the climate of other parts of the world of a kind fitted to lead children to think out for themselves the explanation of differences on the basis of what they know, partly of what they may be presumed to know even in the earliest stage of their geographical teaching, and partly of what they learn in connection with the climate of our own country as compared with other parts of Europe. I would begin with exercises bearing on the contrast between the climate of the Atlantic seaboard of Europe and that of the corresponding latitudes of the Pacific seaboard of Asia, partly because this contrast is so important and partly because it is in large measure so easy to understand. I would direct the children to take down in their exercise-books the average mean temperature of the hottest month and that of the coldest month for a number of places selected as nearly as possible in the same latitudes. And here I would point out, parenthetically, that for most parts of the world (not all) this is a very satisfactory method of indicating temperature, inasmuch as the temperature curve for the whole year generally rises very regularly from that of the coldest month (in the northern hemisphere January or February) to that of the hottest (July or August), and falls with equal regularity to the lowest.[1] Children might then be asked if they could express for themselves any notable differences they observed between the two sets of data, and to aid them in doing so they might be told the fact just mentioned, and directed to construct temperature curves based on the figures in their note-books. When they had succeeded in noting and expressing the difference, they might be asked if they could suggest any probable explanation. If they could not, the explanation should not then be given them, but data should next be dictated to them on the head of rainfall. In this case, however, it will not do to select months. The particulars given must be those for each month in the year, with instructions to construct rainfall diagrams like those in Mill's "International Geography" or that on p. 287 of Simmons and Richardson's "Introduction to Practical Geography," or total quantities for the winter or summer half-year respectively. Then the children might be again asked whether they could suggest any explanation that could apply to the peculiarities of both the temperature and the rainfall of the Pacific seaboard of Asia, and, if they could not all at once, I think it should not be difficult to lead them up to it by a series of questions which aided their thoughts without raising them above the necessity of thinking. And yet these questions would be based on very elementary facts, one that they know or learn in the very earliest years, that some winds are warmer than others, others that they learn later, that warm winds (in the northern hemisphere) are more likely to come from the south than the north, and that rain-bearing winds are more likely to come from the ocean than the land.

At this stage the teaching will have to take into account more and more facts belonging to the domain of physical geography, but care will have to be taken to present these facts from the proper point of view, namely, in relation to the modes in which physical facts or changes modify or affect the value for man of local conditions and place relations. If anything is said as to the depths of the sea, let it be in connection with the effect of shallow or shallowing seas on the height of the waves, or the facilities afforded for catching fish that frequent the sea-bottom, for anchorages, for giving information as to whereabouts of navigators by soundings, for the laying of telegraph cables, &c. If anything is said as to wind action, the behaviour and action of running or otherwise moving water, or as to chemical action, let it always be with the same reference —the difference it makes to man.

From the same point of view also the geology of a country has to be considered. The geographer, as such, has no concern with the history of the earth's crust, though in various ways he has to consider the results of that history. From the nature of the geographer's standpoint as regards geology, it results that he does not, as a geographer, trouble himself to inquire into the geology of any individual feature, however important that feature may be to him, such as the Mont Cenis Pass and the associated valleys of the Arc and the Dora Riparia, the Mohawk Valley, or the Golden Gate leading into the Californian Valley. On the other hand, the geology is of importance to the geographer where any widespread rocks are associated with any characters that affect the value, for man, of the land so occupied, as by determining the character of the soil, the nature of the land forms, the behaviour of water that reaches or passes through it, or in any other way.[1]

What introduces most complexity into the study of geography is the constant change in geographical values, due, among other things, to human activity, discovery, and invention. I may be told that in going into these matters I am going beyond the domain of geography, that the fact that a certain process is practised in a particular industry is not geography. My reply is: Neither is it geography that wheat will grow on such and such soils in such and such a climate. But that is a fact that has a great deal of geographical significance. So also has the fact that the waters of the River Lys at Courtrai possess properties which fit it in a peculiar degree for the retting of flax, so that the flax there retted is the best in the world. There is geographical significance likewise in the fact that commodities are always carried most cheaply when carried in the largest quantity; and this is one among the circumstances that have to be taken into account in explaining

[1] Probably the most accessible collection of data of this kind is to be found in the diagrams in Mill's "International Geography." The most extensive collection of temperature data is that in the late Dr. Buchan's report in vol. xxi. of the Report of the *Challenger* Expedition. A large number of mean temperatures of the hottest and coldest months are given in Longman's "Gazetteer of the World." Rainfall data for a large number of places outside of Europe are given in Erganzungsheft, No. 124, to *Petermanns Mitteilungen*, and later data for South America in Ergänzungsheft, No. 157, and a considerable number of data supplementary to those of the former publication in Dr. A. J. Herbertson's "Distribution of Rainfall over the Land" (Murray, 1901). Both temperature and rainfall figures are given in Blanford's "Climates and Weather of India, Ceylon, and Burmah." The average monthly temperature and rainfall for eighty selected places is given in my London University Extension syllabus entitled "Geography" (1s.).

[1] Since this paper was read Mr. Charles F. Pilcher, of West Ham, has directed my attention to the fact that precisely similar ideas are expressed by Ruskin in "Fors Clavigera," vol. iv., p. 476.

why it is that, though Courtrai carries on a linen industry, it does not use its own flax, but Russian, for the purpose; that it sends the great bulk of its flax to Belfast; that Belfast sends very little of its own linens direct to foreign countries, but ships them to Liverpool and Glasgow for the purpose; and, finally, that Belfast exports a greater value of raw cotton than all other commodities put together, including ships.[1]

THE NEW EDUCATION BILL.

It is not expected that the second reading debate on Mr. McKenna's Bill will take place before Easter. Judging from the discussion which has already ensued on the proposals of the Government, there is little likelihood that the proposals made will satisfy all parties. There is still grave danger that educational efficiency is to be sacrificed to the demands of ecclesiastical partisans. Competent observers assure us that the "religious difficulty," which takes so prominent a part in the speeches of politicians, has little, if any, influence in the schools themselves, and yet the serious work of bringing our system of national education into line with the requirements of modern international competitions is hampered and delayed by extremists on both sides of an unbecoming controversy.

The Bill proposes, among other matters, that in future:

There shall be but one type of public elementary school, provided, controlled, and managed by public authority.

Teachers shall be appointed without religious tests.

The religious instruction given in these schools shall be the same as that given in "board" schools since 1870.

Voluntary schools shall not be recognised in single-school parishes.

Voluntary schools may continue, and may receive State grants, but no rate aid, providing they give efficient secular instruction, do not charge more than 9*d.* a week, and are desired by the parents.

The Government grant per annum for each child in attendance in a recognised voluntary school shall be 47*s.*

We print the text of the Bill so that readers may study it for themselves. Copies of the Bill, together with the Schedules, may be obtained from Messrs. Eyre and Spottiswoode, price 1½*d.* each.

1. (1) An elementary school shall not be recognised as a public elementary school unless it is a school provided by the local education authority and conducted by them in accordance with the statutory provisions affecting schools so provided, and is also a school in which no teacher employed is required as a condition of his employment to subscribe to any religious creed, or to belong or not to belong to any specified religious denomination, or to attend or abstain from attending any Sunday school or place of religious worship, or (except in the case of a teacher employed to give religious instruction only) to give any religious instruction.

(2) A local education authority shall not maintain or aid an elementary school unless it is a public elementary school, and shall provide accommodation in public elementary schools without payment of fees for all children resident in their area whose parents desire that accommodation for them and also for any other children resident in the area who are from any cause not receiving efficient elementary education.

Parliamentary Grants.—2. (1) The enactments mentioned in Part I. of the Third Schedule to this Act, which contain certain provisions with respect to the payment of parliamentary grants, shall cease to have effect.

(2) No parliamentary grant shall be paid in respect of an elementary school other than a public elementary school unless the Board of Education are satisfied—

(*a*) that the school is not a school in a single school parish; and

(*b*) that the number of children in attendance at the school as computed by the Board of Education is not less than thirty; and

(*c*) that the school is open to the inspection of the Board of Education, and that all such conditions of efficiency as regards teaching staff, school premises, and secular instruction as are required by the Board of Education in public elementary schools are complied with;

and the total amount of a parliamentary grant paid in respect of an elementary school other than a public elementary school (exclusive of any grant for instruction in any special subject) shall not exceed *forty-seven shillings* for each child of the number of children in attendance at the school as computed by the Board of Education.

Transfer to Local Education Authority.—3. (1) The trustees of the schoolhouse of an elementary school held under charitable trusts may at any time after the *passing of this Act*, notwithstanding those trusts, transfer the schoolhouse to the local education authority, but no payment shall be made by the local education authority in respect of the transfer of a schoolhouse of an elementary school being an existing voluntary school in a single school parish held under limited trusts as defined by this Act.

(2) If a local education authority, before the *first day of April nineteen hundred and nine*, apply to the Board of Education for an order under this section vesting the schoolhouse of an existing voluntary school in a single school parish in the authority, and the Board are satisfied that the schoolhouse is held under limited trusts as defined by this Act, the Board shall make an order vesting the schoolhouse in the authority without payment unless the trustees desire to continue the use of the schoolhouse for the purposes of a certified efficient school, and satisfy the Board that there is a reasonable probability of such a school being maintained.

A schoolhouse in respect of which an order is made under this section shall become vested in the local education authority in accordance with the order.

(3) Where the schoolhouse of any existing voluntary school is transferred to the local education authority, whether in pursuance of the powers given by this section or otherwise, the authority may, as a condition of the transfer, give the undertakings numbered (1) and (2) in the First Schedule to this Act, and in the case of a single school parish also the undertaking numbered (3) in that schedule, and, where a schoolhouse is vested in a local education authority by virtue of an order of the Board of Education made under this section, shall give any of those undertakings which the trustees require them to give, but no other undertaking shall be given to the transferors or trustees in respect of the use of the schoolhouse by them.

(4) Notice of any undertaking given under this section shall be given to the Board of Education and recorded by them, and if the Board are at any time satisfied on the application of the trustees that a schoolhouse which has

[1] I have been told that this statement has excited some surprise. Teachers may therefore be interested to learn that when I first observed the fact in the "Annual Statements of the Trade of the United Kingdom." I took means to ascertain the explanation from the harbour-master of Belfast. The cotton comes to Belfast in ships laden chiefly with timber and grain. That explains why the ships come to Belfast, where these commodities are required. The cotton is then sent to Russia in ships that bring back flax.

been transferred to or vested in a local education authority by virtue of the powers given to trustees or the Board of Education by this section has ceased to be used as the schoolhouse of a public elementary school, or that any undertaking given under this section is not carried out, the Board shall by order set aside the transfer, or revoke the order vesting the schoolhouse in the authority:

Provided that if in a case where any schoolhouse so transferred has ceased to be used as the schoolhouse of a public elementary school, the Board of Education are satisfied that sufficient provision is made, either by means of the payment of purchase money or otherwise, for carrying out any trusts affecting the schoolhouse other than trusts for secular instruction, the Board may, instead of setting aside the transfer, make such order in connection with the disposal of the schoolhouse as they think appropriate under the circumstances.

(5) Any order of the Board of Education made under this section may impose such conditions and contain such provisions as in the opinion of the Board may be expedient or necessary to give effect to the purposes of the order.

(6) In this Act the expression "existing voluntary school" means a school which was, on the first day of January nineteen hundred and eight, a public elementary school not provided by the local education authority or, so far as respects any interest not transferred by virtue of the transfer, a school which was on that date a school transferred to a local education authority by virtue of an arrangement made under section twenty-three of the Elementary Education Act, 1870, or otherwise; the expression "single school parish" means a parish in a rural district in which, on the first day of January nineteen hundred and eight, there was only one public elementary school, and, so far as respects the provisions of this Act limiting the payment of the parliamentary grant to a school in a single school parish, includes a parish in which there was at that date no public elementary school; and the expression "limited trusts" means trusts under which a schoolhouse is required to be used for the purposes of elementary education whether in conjunction with other purposes or not.

(7) The expression "trustees" as respects any schoolhouse held under charitable trusts includes any person (other than the official trustee) in whom the estate subject to those trusts is vested; but nothing in this section shall authorise the trustees to transfer, or the Board of Education to vest under this section, any estate in the schoolhouse other than the estate which is subject to those trusts.

Where a schoolhouse or any interest therein is vested in the official trustee, or where any difficulty arises as to who are the trustees, any persons recognised or designated to act as trustees by the Board of Education shall be deemed to be the trustees for the purposes of this Act.

Teachers.—4. (1) Where an existing voluntary school is, before the *first day of April nineteen hundred and ten*, transferred to, or vested under this Act in, a local education authority, any teachers in the school at the time of the transfer or vesting shall continue to hold office under the local education authority by the same tenure and on the same terms and conditions so far as they are consistent with the provisions of this Act as before the transfer or vesting.

(2) Any teacher employed at the time of the *passing of this Act* in an existing voluntary school who loses his employment by reason of the school ceasing to be a public elementary school in consequence of this Act, shall be entitled, in accordance with regulations made for the purpose by the Treasury and the Board of Education, notwithstanding anything in the Elementary School Teachers Superannuation Act, 1898, or the rules made under that Act, to pay contributions to the deferred annuity fund under that Act during any time (not exceeding one year after the date at which he so loses his employment) in which he is not employed in recorded service, and to reckon the time in respect of which contributions are so paid as if it were recorded service.

5. Paragraphs (*c*) and (*d*) of subsection (1) of section eighteen of the Education Act, 1902 (which provide for a county council charging certain expenses specially on a parish or on certain parishes in their county), shall cease to have effect.

Supplemental Provisions.—6. (1) Nothing in this Act shall affect the powers of the Board of Education or the local education authority with respect to schools for blind, deaf, defective, or epileptic children under the Elementary Education (Blind and Deaf Children) Act, 1893, or the Elementary Education (Defective and Epileptic Children) Act, 1899.

(2) Children who are or have been scholars in an elementary school in receipt of a parliamentary grant shall be entitled to the benefit of any provision for the benefit of children who are or have been scholars in a public elementary school contained in any scheme in force at the commencement of this Act for the regulation of any endowed charity.

(3) The amendments specified in the second column of the Second Schedule to this Act (which are minor amendments consequential on the provisions of this Act), shall be made in the provisions of the Education Acts, 1870 to 1907, set out in the first column of that schedule.

(4) The enactments mentioned in the Third Schedule to this Act shall be repealed to the extent specified in the third column of that schedule.

(5) This Act shall, except as expressly provided, come into operation on the appointed day, and the appointed day shall be such day, not earlier than the *first day of April nineteen hundred and nine*, and not later than the *first day of April nineteen hundred and ten*, as the Board of Education may appoint, and different days may be appointed for different purposes and for different provisions of this Act, and for the areas of different local education authorities, and for different schools in those areas.

(6) This Act may be cited as the Education Act, 1908, and shall be construed as one with the Education Acts, 1870 to 1907, and those Acts and this Act may be cited as the Education Acts, 1870 to 1908.

OXFORD LOCAL EXAMINATIONS. SET SUBJECTS FOR 1909.

Preliminary.

Religious Knowledge.—(*a*) 1 Kings (chap. ix.–xxii.), (*b*) St. Matthew (chap. x.–xxvii.), (*c*) Acts (chap. i.–xii.), (*d*) Church Catechism.

English History.—Either the Outlines from 1066 to 1399, or the Outlines from 1399 to 1603, or the Outlines from 1603 to 1714, or the Outlines from 1714 to 1815, or the Outlines from 1815 to 1880.

English Author.—(*c*) Either (α) Keary's "Heroes of Asgard" or (β) Macaulay's "Lays of Ancient Rome"; (*d*) either (α) Scott's "Talisman" or (β) "Select Poems of Tennyson," by George and Hadow (vi. to end, omitting xxi., xxii.); (*e*) Defoe and Bunyan in "Select English Classics," edited by A. Quiller-Couch.

Geography.—(iii) The geography of one of (*a*) England and Wales, or (*b*) Scotland and Ireland, or (*c*) India.

Elementary Latin.—"Lives from Cornelius Nepos," by J. B. Allen.

Elementary Greek.—Sidgwick's "First Greek Reading Book" (ed. iii.), Exx. 31–69.

Elementary French.—Either "Contes du petit château" or "Ma première visite à Paris."

Elementary German.—"Kinderfreuden."

Junior.

Religious Knowledge.—(*a*) 1 Kings, (*b*) St. Matthew, (*c*) Acts (i.–xv.), (*d*) Prayer Book.

Ancient History.—Outlines of Roman History from 343 to 146 B.C., with special questions on the Second Punic War.

English History.—(α) Outlines of English History from 1066 to 1399, with special questions on the Reign of Edward I.; or (β) Outlines of English History from 1399 to 1603, with special questions on the period 1453 to 1509; or (γ) the Outlines of English History from 1603 to 1714, with special questions on 1603 to 1640; or (δ) the Outlines of English History from 1714 to 1815, with special questions on the History of the American Colonies from 1714 to 1783; or (ε) Outlines of English History from 1815 to 1880, with special questions on the period 1815 to 1837.

Early English History.—Outlines of English History from 55 B.C. to 1135 A.D.

Foreign History.—Outlines of General European History from 1515 to 1610.

English Literature.—(*c*) Shakespeare's "Tempest"; (*d*) either (α) Shakespeare's "Henry V.," or (β) Shakespeare's "Macbeth," or (γ) Scott's "Quentin Durward," or (δ) Scott's "Lay of the Last Minstrel"; (*e*) either (α) "Select Poems of Tennyson," by George and Hadow, or (β) Burke's "Thoughts on the Present Discontents"; (*f*) "The Oxford Treasury of English Literature," vol. ii. (pp. 1–12, 153–284), by G. E. and W. H. Hadow; (*g*) "Poems of English Country Life"; (*h*) Defoe, Bunyan, Cowper, Crabbe, edited by A. Quiller-Couch in "Select English Classics."

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 III.; Virgil Aeneid III.

Greek.—Xenophon, Anabasis III.; Marchant's "Greek Reader," vol. i.

French.—Either Erckmann-Chatrian's "Histoire d'un conscrit" or Hugo's "Bug Jargal."

German.—Hauff's "Karavane."

Senior.

Religious Knowledge.—(*a*) 1 Kings, (*b*) St. Matthew, (*c*) Acts, i.–xv., (*d*) 1 and 2 Thessalonians, (*e*) 1 and 2 Thessalonians in Greek, (*f*) The Church Catechism, &c.

Ancient History.—Outlines of Roman History from 343 to 146 B.C., with special questions on the Second Punic War.

English History.—Either (α) English History, (i) 1066–1399, or (ii) 1399–1603, or (iii) 1603–1714, or (iv) 1714–1815, or (v) 1815–1880.

Early English History.—Outlines from 55 B.C. to 1135 A.D.

Foreign History.—Outlines of General European History from 1515 to 1610.

English Literature.—(*c*) Either (α) Chaucer's "Prologue to the Canterbury Tales" or (β) Shakespeare's "Tempest"; (*d*) either (α) Shakespeare's "Henry V.," or (β) Scott's "Quentin Durward," or (γ) Browning's "Strafford"; (*e*) either (α) More's "Utopia," or (β) Burke's "Thoughts on the Present Discontents," or (γ) "Select Poems of Tennyson," by George and Hadow; (*f*) "The Oxford Treasury of English Literature," vol. ii., by G. E. and W. H. Hadow; (*g*) "Selections from Dryden," edited by G. E. Hadow.

Geography.—(i) Principles of Geography, (ii) British Empire, (iii) *one* of (*a*) Europe, (*b*) Asia, (*c*) North America (including West Indies).

Latin.—(α) Caesar, De Bello Gallico III., IV., or (β) Virgil, Aeneid III., IV.

Greek.—(α) Xenophon, Anabasis III., IV., or (β) Euripides, Hecuba.

HISTORY AND CURRENT EVENTS.

IT is a long time, as political memories go, since we heard of Turkey as the "sick man of Europe." Perhaps the diagnosis of Nicholas of Russia in 1853 was not quite correct. Perhaps the amputation that Turkey suffered in 1878 gave the invalid a fresh lease of life. If there is any strong feeling against the Sultan now, it expresses itself by speaking of him, not as "sick," but as "unspeakable." What the real causes of Macedonian trouble are it is impossible to say with any certainty. To those of us who get our information from the usual sources it would seem as if the Christian peoples there—Bulgarian and Greek—were bent on one another's extermination, and that the Turk either cannot or will not keep the peace. Meanwhile, two rival proposals for making railways in the Balkan peninsula are setting the Powers by the ears. What would George Stephenson have said to this phase of the railway movement? Did he, for example, think of railways as causes and means of war? We think not.

TURKEY shows a capacity for long endurance in Europe. When Greece in 1897 made war on her *à propos* of Crete, it was Turkey who won. Against the greater Powers of Europe her defence is, of course, in their mutual jealousy. Austria and Russia are opposed in their desire to extend influence in the Balkan peninsula, and Great-Britain-and-Ireland will still "not let the Russians take Constantinople." Recent events, too, have reminded us of an old story. In telling European history, our authorities stop geographically with Russia and Turkey in their eastern survey. Yet, even so, they cannot abstain at times from mentioning Persia, the country which has a common boundary with both those Powers. Both of them were at times affected in their western policy by "wars with Persia." And now, for some months, there has been an obscure frontier dispute between Turkey and Persia, in which the western Powers are interested. History is one, whether regarded geographically or chronologically.

How often do we think of the German Emperor, William II., as Prussian King? The generation which has grown up since 1870–1 scarcely knows Prussia or can define exactly what it is. Yet Prussia is a country, or rather a collection of countries of different religions, and, at least in origin, of different races, which has a history that is not entirely that of Germany. It is the predominant partner in the German confederation which was completed in 1871 and gave itself the name of an empire. The Prussian King is *ex officio* the German Emperor. As Prussia it has trouble with Poles in its eastern frontier. As part of Germany it has trouble with the inhabitants of Elsass-Lothringen on its western frontier. Neither of these districts can be satisfactorily assimilated. Thus we

have in these days the passing of a Bill in the Prussian Diet to expropriate Polish landlords, and those who in the German Diet sympathise with Alsatians, pleading for the retention of the French language there, and sympathising with the Poles.

In the middle of the eighteenth century the French philosopher Montesquieu said that in Great Britain the legislative, executive, and judicial powers were in different hands, and that this "separation of powers" was one cause of British "liberty." The American colonies, when independent of the mother country and framing a constitution in 1787, adopted this version of the British constitution, and made the separation a reality there which was never more than a pious aspiration in this country, voiced in the Act of Settlement for a time, and in many Place Bills which did not pass. The consequence is that in the United States such a conversation as took place on February 11th last in the British House of Commons could never come about. "Answering Mr. W. Redmond, who asked whether members would be given an opportunity for expressing their views as to the policy of the Zakka Khel expedition, Mr. Morley said he certainly hoped no discussion would take place until the expedition should at any rate have made some advance." He only "hoped" it. Yet the hope was fulfilled.

ITEMS OF INTEREST.

GENERAL.

The council of the British Association has nominated Prof. J. J. Thomson, F.R.S., Cavendish professor of experimental physics in the University of Cambridge, to be president of the meeting of the association which is to be held at Winnipeg next year. The investigations carried on by Prof. Thomson in the Cavendish Laboratory, and by the distinguished men of science who first worked under him and received inspiration from his researches, laid the foundation for the new views held by chemists and physicists as to the corpuscular theory of matter and the remarkable properties of radio-active substances.

The Board of Education has now issued a list of twenty-eight holiday courses which will be held on the Continent at different times during the present year, but mostly in the summer months. Four of the courses are in Germany, viz., Greifswald, Jena, Marburg, and Neuwied; three in Switzerland, viz., Geneva, Lausanne, and Neuchâtel; one in Austria, viz., Salzburg; one in Spain, viz., Santander; one in Italy, viz., Florence; and the rest in France, viz., 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 paper issued by the Board of Education 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. Copies of the paper can be obtained free on application to the Board of Education Library, St. Stephen's House, Cannon Row, London, S.W.

Among the most popular summer courses are those held at Jena, which were attended last year by no fewer than 531 students. The programme of the courses to be held from August 5th to August 18th this year includes many subjects of interest and importance. In natural science there will be 12 courses of lectures; in pedagogy, 9; colonial science, 4; school hygiene, 6; theology, history, and literature, 5; rhetoric and speech (German, French, and English), 5; political economy and social science, 12. There will thus be fifty-three separate courses, some of six hours and others of twelve hours. Particular attention is directed to the courses on colonisation, sociology, and school hygiene. A social gathering will be held in the Town Hall on the evening of August 4th, and two evening lectures will be given—one by Dr. F. Schomerus on Ernst Abbe and the Zeiss optical works, and another by Prof. Waentig on folklore and art. Details as to subjects and prices of courses can be obtained from Fräulein Clara Blomeyer, Jena, Gartenstrasse 4.

The last of the course of lectures on the teaching of geography arranged by the Geographical Association will be given in the botanical lecture theatre of University College, Gower Street, London, W.C., on April 10th at 8 p.m. The subject will be "Notes on Geographical Laboratories," and the lecturer Mr. A. T. Simmons. Tickets may be obtained from Mr. J. F. Unstead, 5, Wiverton Road, Sydenham, S.E.

Mr. John Russell, King Alfred School, Hampstead, will give a specimen moral lesson, on "England expects every man to do his duty," in connection with the Moral Instruction League on April 6th, at 7 p.m., at 18, Buckingham Street, Strand, London. The lesson will be followed by criticism of the teacher's method.

Surely there is no reason to-day why the son of indigent parents who possesses brains should not carry his education as far as his capabilities permit. Every great educational authority appears to offer an abundance of scholarships. In some districts, indeed, the number of scholarships available is greater than the supply of qualified competitors. We have received a copy of the particulars of scholarships and exhibitions offered by the Worcestershire Education Committee. The list includes thirteen classes of scholarships, bursaries, or what not, to be competed for during the present year. Fifty secondary day-school scholarships are to be awarded, each of sufficient value to cover payment of fees, cost of books and stationery, and an allowance towards travelling expenses, and this will be augmented in special cases by a grant for maintenance. In addition, there are ten intermediate scholarships tenable at approved secondary schools, five major scholarships valued at £50 per annum, intended to afford facilities for higher education, besides bursaries for intending elementary-school teachers and technical scholarships of various values. It would seem that the ladder from the elementary school to the university has become a very real thing.

The French Ministry of Public Instruction has recently decided that for the future the sum of £16, previously payable by English répétitrices in French Écoles Normales, shall no longer be demanded. English répétitrices in these institutions will henceforward be appointed "au pair."

The annual conference of the School Nature Study Union was held on February 29th. The chair was taken by the president of the union, Sir George Kekewich, K.C.B., M.P. Dr. Hayward delivered an address on "Nature-study as a Protest against the Dogma of Formal Training." Miss von Wyss spoke on "The Outlook of Nature-study." A discussion followed, in which Sir George Kekewich, Mr. Cross, Mr. Lewis, Mr. Rice, and Miss Holmer took part. The opportunities for gaining first-hand knowledge of nature afforded by the summer excursions organised by the Nature Study Union were pointed out.

The fourth biennial vacation course at Oxford, from August 10th to 28th, will be opened by an introductory

lecture in the evening of August 10th. There will be at least two lectures, and a period of practical work in field or map-room, or an excursion, each day. Special evening lectures and discussions will be arranged. The chief courses of lectures will probably be on the physical and social geography of the western Mediterranean and its margins, actual and historical; the geography of North America; and a practical course on the methods of map-making. In addition to members of the staff of the School of Geography, it is hoped that Prof. W. M. Davis, of Harvard; Prof. A. P. Brigham, secretary of the Association of American Geographers; Prof. J. L. Myres, of Liverpool; the Rev. E. C. Spicer and Mr. J. F. Unstead will take part. Two courses of practical work will be planned, one for those who have not done any before, and the other for those with some experience. The former will consist of at least four demonstrations in the field and eight lessons in the reading, measurement, and making of maps in the map-room. The latter will consist of more advanced map-making in field and map-room. As the numbers will be strictly limited, names should be sent in as soon as possible to the Reader in Geography, marked on the envelope "Vacation Course." The fee for the whole course will be £3 3s.; the fee for the course, exclusive of practical work, £2 2s.

It will be remembered that towards the end of 1906 Dr. Butler, of Columbia University, and Mr. Alfred Mosely arranged for five hundred British teachers to visit the schools of the United States. We are informed that Mr. Mosely is now interesting himself in a return visit of American teachers, who will visit this country to inspect our schools and colleges. Five hundred American teachers will, it is expected, arrive between September of this year and March, 1909. The American teachers who make these visits are to be met on arrival by reception committees, with whom details as to places and schools to be visited will be arranged. The visit is being arranged by the National Civic Federation, and all correspondence should be addressed to Mr. Roland P. Falkner, executive secretary, 281, Fourth Avenue, New York.

The latest report of the U.S. Commissioner of Education gives, as usual, a large amount of information, not only about American education, but also, by means of special articles, about education in all parts of the world. The statistics of the year ending June, 1906, with which the report deals, show that there were 9,560 secondary schools in the United States reporting to the Washington Bureau. Of this number 8,031 were public and 1,529 private institutions. The number of pupils enrolled in the former was 722,692 and in the latter 101,755. In addition to these numbers, which cover enrolment in ordinary secondary schools, 19,258 pupils in public and 80,694 in private colleges having preparatory departments received secondary education; the grand total is consequently 924,399. This number represents about 1,100 to the 100,000 of estimated population. For the past three years, the report states, a little more than 1 per cent. of the total population of the United States has been enrolled in secondary schools. The enrolment in private secondary schools has hardly preserved its ratio since 1890, while the public secondary-school enrolment has increased in a greater ratio than the population.

The Committee of Management of the London College of Music, in order to encourage students possessing ability and special talent in music, and to provide for their systematic training over a given period, is offering for public competition twelve open scholarships giving free tuition, suitable for a professional student, for two years at the college. They are available for persons residing in any part of the United Kingdom, and are without any restriction or reserve in regard to age or sex (except the singing scholarships, in which the voice is specified). The twelve scholarships will consist of four for singing, two for pianoforte playing, two for violin playing, one for viola, one for harmony and counterpoint, one for organ playing, and one for playing an orchestral instrument. All candidates must be prepared to read at sight and to answer general questions on the rudiments of music should the examiners so desire. The competition will take place on or about April 23rd, but due notice will be sent to all candidates. The successful competitors will commence their studies at the college with the summer term. Entries must be made on a special form, and must be sent in not later than Thursday, April 16th, to Mr. T. Weekes Holmes at the college, Great Marlborough Street, London, W.

A good blackboard surface for the walls of class-rooms is so useful a part of school equipment that we are glad to make known the following method of securing it, which has been adopted with great success at the Haberdashers' Aske's Hampstead School. We are indebted to Mr. R. W. Hinton, the headmaster of the school, for the information. Grind carefully selected slag into a sharp ash in a mortar-mill. Throw out and wash through a fine sieve into a tub. Stir well, and clear away scum by overflow. Take out the ground and washed ashes, retaining the water in the tub for mixing the "compo.," adding vegetable black in proportion to the quality and darkness of the ash used. Take one part by bulk of best Portland cement to three of prepared ash and mix, using the blackened water. Lay on about a quarter of an inch thick, well trowelled to a fine surface, paying careful attention during the setting process to avoid cracks on the face, which must be gently trowelled over as they appear. The bed should be of ordinary cement rendering—one of Portland to three of coarse washed sand, and roughed in the ordinary way.

The Education Committee of the Shropshire County Council is taking steps to increase the number of secondary schools in the county. It has been decided to erect two schools at Shrewsbury, one for boys and one for girls, each to accommodate two hundred pupils; the cost of both schools together is not to exceed £18,000. A dual school is to be provided at Wellington at a cost of £9,000, and a secondary school for girls at Oswestry is to be built at once. It is hoped soon to come to an arrangement with the governors of the Oswestry Grammar School, and to obtain an alteration of the scheme under which the school is administered.

If the number of candidates passing the Matriculation examination of the Cape University may be taken as an index, there is year by year a steady improvement in the work of the secondary schools of South Africa. A recent number of the *Education Gazette* of Cape Town states that at the recent Matriculation examination the advance in the number of passes in 1907 as compared with 1906 was 157, while the increase in 1906 compared with the previous year was 104. The following table from our contemporary institutes an interesting comparison:

	1906	1907	Increase
Cape Colony	529	711	182
Transvaal	55	99	44
Orange River Colony ...	31	39	8
Natal	28	52	24
Rhodesia	0	3	3
Totals	643	904	261

It will be noticed that Natal has almost doubled its total, and that in the case of every colony there has been a decided increase. Ten years ago the number of passes at this examination reached 372 as compared with a total of 904 last year.

From the same source we learn that the practice of holding vacation courses for teachers is being adopted in South Africa. The *Gazette* announces that a "free course of training for acting uncertificated teachers of some age and experience and for those already possessing professional certificates will be held in Grahamstown during the next winter holidays. In addition to the general course there will be a special course in drawing, open to certificated teachers only. These courses are open only to European members of the teaching profession, and are designed for the benefit of those working in the Eastern Province." The sole expense to be incurred by the teachers will be the cost of board and lodging during the continuance of the lectures.

Dissatisfaction with current educational methods is not characteristic of this country alone. British teachers are disposed to think that we alone of the civilised peoples of the world feel that we have much to learn from the educational systems of other countries. But this is far from true. Foreign observers are continually studying our procedure, and many appear to find much to admire, which they urge their countrymen to copy. To give an example: Prof. J. H. Canfield, reporting recently on certain educational characteristics in England and France to the faculty of Columbia College, New York, spoke in glowing terms of the influence of the prefects and sixth-form boys in our public schools. He says: "It is hardly too much to say that the discipline of the entire school lies wholly with these top-form boys. They accept it very seriously and administer it very thoughtfully. . . . Lads of the age of our freshmen and sophomores are seriously minded and sober, in walk and conversation, as is becoming those who govern by example as well as by precept, and are so largely responsible for their young schoolmates. These older pupils are not as sophisticated as our first and second year men; they seem much more boyish, much more simple-minded. But in their sense of responsibility they are quite beyond our men. . . . In all this the two countries are as far apart, and apparently as irrevocably apart, as they are in the matter of lawns; and for much the same reason." Or, again: "There is certainly no easy path with us toward creating and fostering the personal relations which exist between the English top-form boy and his masters, or anything like the relations of responsibility between older and younger pupils—even if these relations are desirable." The report as a whole is an interesting document which tells much about how our educational practice strikes an educated observer from another country.

The Governing Body of the Imperial College of Science and Technology has appointed as secretary Mr. Alexander Gow, who has for the last four years occupied the position of director of education and principal of the Technical School, Blackburn.

SCOTTISH.

The Educational Institute of Scotland, which includes among its eleven thousand members representatives of every grade of the teaching profession, has issued to Scottish members of Parliament a statement of the case for an Education (Scotland) Bill this session. In regard to the vexed question of areas, the institute suggests that a new area should be set up, viz., such an area as would be in a position to establish and maintain a secondary school, the bounds of the said area to be determined by a Commission specially appointed for the purpose. The institute further urges that the questions of superannuation and tenure call for immediate settlement. In regard to tenure, it is suggested that in the case of dismissals an appeal should be allowed either to the Education Department or to the Provincial Committees. On the subject of superannuation, it is pointed out that during the session of 1906 no fewer than fifty-two members of Parliament signed a memorial asking the Secretary for Scotland to provide better pensions for teachers, and that a somewhat similar appeal was also made last session. The institute, apparently, would be quite prepared to accept in the meantime the settlement provided by Clauses 10 and 11 of last year's Bill, and the Secretary for Scotland is reminded of his promise to give at least no worse terms in any future Bill. At the same time, it must be admitted that the prospects of the Education (Scotland) Bill this session are practically *nil*. The whole time of Parliament seems to be already fully mortgaged, and unless an autumn session is in contemplation there is no use producing a Bill that simply cannot be passed.

The annual report of the Carnegie Trust serves to emphasise afresh the magnitude of its operations and its increasing influence in shaping the development of university education in Scotland. Since January, 1903, when the Trust began, a total sum of £156,489 has been paid over to the universities, while close on £200,000 has been expended on the payment of the class fees of students. The scheme of endowment of post-graduate study and research continues to be developed on excellent lines. The total expenditure on this department last year was £7,000. The Executive Committee of the Trust at the beginning of the year submitted a proposal to the universities for an inclusive fee for all its students instead of separate fees for each class. This proposal has been under the consideration of the various University Courts, and has received a somewhat luke-warm reception. Aberdeen is frankly hostile, St. Andrews is favourable, while Glasgow and Edinburgh want more information. The Committee specially requests that intending beneficiaries who have obtained the necessary certificates should make early application to the secretary, and, if possible, not later than September 15th of each year.

The Education Department has issued a very important circular in regard to the Leaving Certificate examination of 1908. Intimation is made that no certificate will be awarded to any candidate who does not continue in attendance until the beginning of the summer vacation. The circular further makes clear the disputed question whether all pupils who completed a three years' course of intermediate education had to be presented for the certificate. The Department says "No; not unless in the opinion of the headmaster such pupils are likely to make a satisfactory appearance." Particular attention is directed to the following points: (1) every candidate in lower English should be provided with a graduated ruler and compasses; (2) candidates should be provided with dividers for use in answering paper iii. (geography) of the higher English. Such candidates also should be prepared to read an Ordnance map, to make measurements of distances and areas, and to draw sections approximately to scale. Candidates taking bookkeeping should be provided with red ink and a round ruler.

Prof. Ramsay, who in his time has rendered invaluable services to Scottish education, has come out from his retirement to fight the battle for freedom to teach in

secondary schools. These schools, through the recent regulations and circulars of the Department, are threatened with a bondage more stringent and more intolerable than that from which the elementary schools have just emerged. The Department has weighed up and measured the "average pupil," and prepared for him what it euphemistically calls a well-balanced curriculum. This curriculum all pupils must follow. If they do not belong to the "average pupil" species that is their lookout. The Department cannot admit exceptions. Individual tastes, aptitudes, and capacities are to count for nothing. All must conform or no grants will be available. Prof. Ramsay has issued a circular to the heads of all secondary schools asking their opinion of the new regulations, more particularly in regard to the following two points: (1) Is it a wise policy to force all pupils into one educational groove, however admirable in itself it may be? and (2) is it a sound educational policy to prescribe the hours to be given to certain subjects without any regard to the circumstances of individuals and schools? There can be no doubt what answer the teachers will give to these questions, as through their various associations strong protests against the new regulations have already been made.

The Scotch Education Department has just issued the regulations for the King's Scholarship examination to be held in December next. Intimation is made that this will be the last examination for entrance into a training college. Hereafter candidates will be admitted on the satisfactory completion of a regular course (that blessed word of the Education Department at present). Only those who have been pupil teachers will qualify for immediate admission to the training college through the scholarship examination. Successful candidates, other than pupil teachers, must serve as assistant-teachers for a period of not less than twelve months in order to obtain admission.

Prof. Davies, of Glasgow University, in addressing a meeting of the Teachers' Guild, said that there were two objects for which Greek might be studied, one being general culture and the other advanced linguistic scholarship. Both these aims should, he considered, be recognised by educational authorities. The universities could take account of them in two ways, internally by effecting the complete separation of the ordinary and honours courses, and externally by altering the nature of its preliminary examination. The Greek course for the honours student might very well remain as at present, but for the ordinary student he advocated dropping composition altogether. Instead, an effort should be made to cover the whole range of Greek literature, dealing very largely in translations to save time. This seems like seeking "to get the palm without the dust." Yet Shakespeare managed to write his immortal works on some such fare both in Greek and Latin.

IRISH.

It is stated that the Irish University Bill will be introduced before the end of March, so that before the present number is issued the outline of Mr. Birrell's proposals may be known. It is also stated that the second and third readings will be deferred to an autumn session, no doubt in the hope that all differences may be smoothed over during the summer, and the Bill win, if possible, general acceptance. It now appears that Mr. Birrell's corrections of the Provost of Trinity's famous speech were limited to one paragraph, and intended to remove possible misapprehensions. The speech, at the same time, was unofficial.

The Rules and Programme of the Intermediate Board for 1909 have not yet appeared, and will probably be late this year. The Commissioners are said to have made up their minds that the new Rules shall be final for a period of ten years. No doubt Rules with a stamp of finality will have something to recommend them, seeing the constant change from year to year in important points since the beginning of the century; but as the Rules have in the past contained many principles open to serious objection educationally, teachers are looking forward with considerable apprehension to their publication, as up to the present their representatives have not been taken into the confidence of the Board with regard to any changes that are being made.

The Royal University has fixed its Matriculation examination for the second week of the Intermediate examinations in June, and as this will prevent some students who wish to do so from taking both examinations, it is hoped that the Royal will alter the date of its examination. The work for the two examinations runs on identical lines for the most part, and it is a great convenience to many students to take them both in the same year.

Prof. Williams, professor of German in Trinity College, has been delivering a series of three lectures on the "Teaching of Modern Languages" in Alexandra College, Dublin. He started with three principles: (1) English should form the basis of all language study; (2) foreign languages should not be begun too soon, not before the fourteenth year; and (3) one foreign language in addition to English was probably quite sufficient under the conditions of ordinary school life. He thought more than two languages should never be studied in school, and should certainly never be begun together. The study of foreign literatures was not a school subject. Some of these views are very revolutionary. The Intermediate Board insists for all students over fourteen upon a knowledge of two languages other than English. The British Association Curricula Committee thinks that one foreign language should be begun at an early age, and Latin about twelve, and a large section of the Classical Association holds the same views. Some of us who learnt four, or even five, languages at school and do not regret it would be sorry to accept all the modern views, and although Prof. Williams is entitled to his opinion, it should be heard with great caution.

Now that the possibility of *ad eundem* degrees for women at Trinity College has come to an end, a calculation has been made of the number of women from Oxford and Cambridge who have used the opportunity which it offered. The number is more than 800, so that clearly Trinity College supplied a long-felt want. Mrs. Fawcett has further calculated that the amount received by the college in fees has amounted to nearly £16,000; but this figure is quite inaccurate, and should probably be halved. She is, however, right in saying that most of it is being spent for the benefit of women students. Among other things, the question of a women's hostel is practically settled.

The Department of Agriculture and Technical Instruction announces the continuation of its summer courses for teachers this summer. They will be six in number: (1) in experimental science, in laboratory arts, in drawing and modelling; (2) in domestic economy and manual training (woodwork); (3) in lace-making, crochet-work, embroidery, sprigging, and drawn-thread work; (4) in rural economy; (5) in manual training (metal-work) and in build-

ing construction; and (6) in hygiene and sick nursing and in high-class cookery. The courses will be held in Dublin, Belfast, and Cork, the first three from July 7th to July 31st, and the last three from August 4th to August 29th. Full details are to be obtained on application to the Department.

At the recent triennial visitation of Queen's College, Cork, the president (Dr. Windle) stated that the following improvements had been made since the previous visit: the chairs of anatomy and physiology have been divided; a bone room and anatomical museum have been provided, communicating with the dissecting room; a physical laboratory, a pathological laboratory, a laboratory of practical and chemical physiology have been provided; Colonel Sexton has established and paid for an Anglo-Indian library; a students' club has been erected and furnished; and a new biological laboratory is being erected. The visitors inspected the college, and made the following recommendations: that the accommodation for teaching purposes should be increased to meet the large and steady increase in the number of students; that the floor of the dissecting room should be reconstructed of some non-absorbent material; and that instruments should be obtained to constitute at the college a climatological station.

WELSH.

The Merioneth County Council has passed a resolution approving the present Education Bill. It is stated that the Bill will bring about £2,000 additional grants to the county and relieve the rates to the extent of about 2*d.* in the pound. The Wrexham Free Church Council has also passed a resolution expressing hearty approval. The resolution says: "We welcome the provisions made in the Bill for securing a provided school, under complete public control and without any sectarian tests or teaching, within reach of every child throughout England and Wales. To secure these provisions we submit to the clause permitting 'contracting-out,' although convinced that it falls short of the ideal of a complete national system of education, inasmuch as it perpetuates ecclesiastical tests and fails to secure effective popular control over all elementary schools." The Anglesey County Council has also approved the Bill. If passed, it is expected it will save 3*d.* in the pound on the rateable value of Anglesey, and at Holyhead as much as 8½*d.* in the pound.

On the other hand, the Bishop of St. Davids maintains that by proposing to repeal section 97 of the Act of 1870 Mr. McKenna provided that "nothing would be settled in the Bill about the amount of grants except that they must not exceed 47*s.* per child. Within that limit the Minister of Education would be free to give voluntary schools as low an amount in grants from time to time as he pleased. In the Bill no provision is made beyond the first year for teachers in voluntary schools to partake of the benefits of the Superannuation Act, or for children in future to partake of county scholarships and other benefits now open to children in all public elementary schools alike."

The following Regulation, supplementary to the Regulations for Secondary Schools in Wales (including Monmouthshire) (Cd. 3643), issued in July, 1907, has been made by the Board of Education: "Notwithstanding anything contained in the Regulations for Secondary Schools (Wales) in force from August 1st, 1907, a grant not exceeding £5 will be paid in respect of each bursar in attendance at a secondary school recognised for grants under chapter iii. of those Regulations who is following an approved curriculum, whether that of the approved course or not, and who in other respects satisfies the conditions which if he were attending the approved course would entitle the school to grant on his account, and no limitation as to number of years in respect of those grants shall apply to any such bursar. In fixing the amount of grant the Board will in each case pay due regard to the standard and character of the work taken."

In Montgomeryshire a representative of the teachers on the Education Committee of the County Council has lately protested against the "glaring inequalities under equal conditions." It appears that eighty applications for increase of salary had been received, and the Executive Committee had made varied recommendations. Criticism was made as to increases given to applicants engaged under article 68, on the ground that there was no guarantee that these teachers were fit for their posts. The teachers' representative said: "With regard to the employment of article 68 teachers, I think Wales is the 'black spot,' and that Montgomeryshire is the 'black spot of Wales.'"

The Guild of Graduates of the University of Wales is doing admirable work in the reprinting by the Literary Section of the Guild of old Welsh books. The following have appeared: "Gweithiau Morgan Llwyd o Wynedd," edited by the late Thomas E. Ellis, M.P.; "Llyfr y Tri Aderyn," Gan Morgan Llwyd o Wynedd; "Oll Synwyr Pen Kembero: a Collection of Proverbs Published by W. Salesbury about 1547," edited, with an introduction, by J. Gwenogfryn Evans; "Yny Lhyvyr hwnn: the Welsh Primer of 1546," edited, with an introduction, by J. H. Davies; "Drych y Prif Oesoedd by Theophilus Evans, 1740," edited, with an introduction, by S. J. Evans; lastly, there is now announced "Deffynniad Ffydd Eglwys Loegr," by Maurice Kyffin, facsimile reprint of the first edition of 1595, edited, with an introduction, by W. Prichard Williams.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Chateaubriand, Atala. vii+120 pp. (Heath.) 1*s.* 3*d.*—For advanced classes "Atala" will form an interesting reader, as it presents an excellent example of the poetic prose characteristic of the pioneer of the Romantic movement. The brief introduction and the ten pages of notes are quite adequate, and the vocabulary seems to be complete, though it was hardly wanted. The text is neatly printed and misprints are rare. We have noticed a superfluous *ne* (p. 40 l. 25), *ça* for *çà* (p. 47 l. 5), *quelquer* (p. 84 l. 19), and such old-fashioned spellings as *poëte, très-heureuse.*

G. Sand, La Mare au Diable. Edited by Mrs. M. Pease. 126 pp. (Blackie.) 1*s.* 6*d.*—Mrs. Pease has written a very good biographical introduction. The notes on the subject-matter and the English renderings also deserve praise, but the grammatical notes are often too technical. The vocabulary is practically complete.

Madame D'Aulnoy, La Belle aux Cheveux d'or. Edited by A. J. Berwick and A. Barwell. vii+72 pp. (Blackie.) 1*s.*—The "aids to pronunciation" are not satisfactory. The text is well printed in large type; a few poems unconnected with the story are added. A vocabulary is given for each section, and *questionnaires* which seem to us inadequate. In the later lessons there are also some sentences for retranslation. The book cannot in any way rank as a contribution to method.

Molière, L'Étourdi ou les Contretemps. xii + 129 pp. (Dent.) 1s. 6d.—Again we are indebted to Dr. Spencer for a charming addition to the "Temple Molière." The introduction, glossary, and notes are characterised by the same restrained scholarship which the editor has shown in previous volumes.

Classics.

The Vocabulary of High School Latin. By Gonzalez Lodge, Teachers' College, Columbia University, New York. viii + 218 pp. (Columbia University Contributions to Education.) 1.50 dollars.—This is an important book, which every schoolmaster ought to possess. It gives the full vocabulary of Caesar, *B. G.*, I.–V.; Cicero, *Cato, Imp. Pompei, pro Ant.*; Virgil, *Aen.*, I.–VI., arranged alphabetically with meanings. The words are printed in different type to distinguish the usual vocabulary of Caesar, Cicero, and Virgil as shown in these portions of their works. With each word the first occurrence is given, with the total number of occurrences. The whole number of words in the list is 4,650; of these, 849 words are found in all three authors; 1,954 words occur five times or more. These last 1,954 words are the essential words of the language: if these be divided up amongst the earlier years of Latin work and learnt, the pupil may count on being able to understand nine-tenths of the ordinary Latin books. A few pages are given on the formation of Latin words, and in the appendix the words are given in order of their occurrence in the books chosen. Whether this be suitable for use as a boy's dictionary we do not feel quite certain, but beyond a doubt every schoolmaster ought to have it. The book is not large or dear, but it gives the results of many years' labour, admirably presented, and may save the schoolmaster much labour and perplexity on his own part.

Aeneid, Book X. By L. D. Wainwright. viii + 146 + 44 pp. (Bell's Illustrated Classics.)—The introduction, besides the usual "life and works" of Virgil, gives a brief notice of some English verse translations, which should be useful. The scheme of the hexameter is out of place here. There is a vocabulary and an index, the latter containing much that the reader ought to do for himself (for example, the instances of case-usage). The notes occupy seventy-four pages of small print, the text and pictures sixty-four pages of large print. A good deal of the notes would be better omitted—*e.g.*, the scraps of translation, "echoes of Homer," and many of the pieces of learning which only distract the learner's attention. There are long English summaries of the matter interpolated in the text, and it is difficult to see what the learner is to do except to absorb what is given him. We think this a mistaken view of education. The pictures ought to be away from the text; they also distract the thoughts.

Ovid, Metamorphoses, Book XI., 410–748. Edited by J. F. Stout. 43 pp. (Clive.) 1s. 6d.—This book will afford a piece of interesting reading for part of a term, or a whole term with a low form. It is provided with the usual helps to meet the wants of those who have to work alone: introduction to the poet and the poem, the metre and the legend of Ceyx and Alcynoe, and abundant elementary notes. We have often expressed our opinion of the too abundant notes in books of this sort, and we have no reason to change it.

Caesar, Gallic War, Book VIII. By W. H. D. Rouse. xi + 33 pp. (Blackie.) 6d. net.—This book is in continuation of the edition of the Gallic War already published. It is, of course, by A. Hirtius, one of Caesar's lieutenants, and not by Caesar himself, but it is valuable as describing the conclusion of his campaigns in Gaul. This edition has the now well-known features of short introduction and text with critical notes only, and all the long vowels marked. On p. 5 we observe *Remōrum* beside *Rēmīs*, but this is almost the only mistake that has caught our eyes.

English.

The Heart of Midlothian. With Introduction and Notes by J. H. Boardman. (Black.) 2s.—There is surely something lacking—if it be only a sense of humour—in the equipment of an editor who solemnly sets down as a note to Scott's great novel that "Ben Nevis in Inverness-shire, 4,406 ft. high, is the highest mountain in the British Isles." Nor let it be thought that we have chosen an unfair example of this most interesting method of inculcating a love of literature and an appreciation of great writing; a note of fourteen lines on *Wellington trousers* stares us in the face as we write. Let us not be misunderstood; the notes are not bad notes; they are, of their sort, good notes; but they are of the wrong sort; they are otiose, uninteresting, isolated; there is in them but little play of allusion or comparison. For instance, how gladly would we have sacrificed those fourteen lines on *Wellington trousers* for fourteen lines from De Quincey's "English Mail Coach" when an allusion in the text to the "chariots of Mr. Palmer" had brought tripping to our tongue the description of the man who "had accomplished two things, very hard to do on our little planet, the Earth, however cheap they may be held by eccentric people in comets: he had invented mail coaches and he had married the daughter of a duke."

A Legend of Montrose. Edited by G. C. Gordon. With map. (Clarendon Press.) 2s.—We think that Mr. Gordon has chosen the better way; instead of loading his notes—"principally concerned with clearing up the voluminous reminiscences of Dalgetty"—with Scottish and foreign words, he has relegated them all to a glossary. The editor's introduction may be read with pleasure and profit; it deals clearly with the three interests of the book, the Legend itself, Montrose, and the character of Dalgetty. We heartily endorse—after practical application—the editor's exhortation to teachers to make more use of Scott's "Tales of a Grandfather," not only as he suggests, in illustration of the novels, but as a text-book for those parts of English and Scottish history which are inextricably interwoven.

Seventeenth Century Prose. Edited by Elizabeth Lee. (Macmillan.) 1s.—This little book is a sign of the times. It belongs to the series, generally edited by Mr. Fowler, called "English Literature for Secondary Schools." For the arrangement we have nothing but praise, and for the discrimination in selection nothing but admiration. The minimum of explanation is given, while the province of the teacher is not invaded; the biographical and critical introductions are models of such work. The ground covered—and satisfactorily covered—is shown by an enumeration of the authors: Milton, Walton, Browne, Cowley, Taylor, Fuller, Clarendon, Bunyan, and Dryden. It is after reviewing such a book that we become optimists with regard to the future of English teaching.

History.

An Elementary History Source Book. xii + 197 pp. (Pitman.) 3s. 6d.—"It consists of ninety-four extracts from the best original sources of English history, each of which the editor has prefaced with a title and a short introduction explaining its subject and who was its author. . . . Nearly all the 'constitutional' and otherwise

difficult documents have been avoided . . . it is meant for the everyday pupil and the ordinary everyday teacher." So says the preface, and the book fulfils the promise. The first quotation is from Tacitus, the last is the message of King Edward VII. to his Empire at his accession. Everything is in all but modern English, and it will serve to persuade those who have not yet used "sources" to do so.

English History Illustrated from Original Sources, 1603–1660. By F. J. Weaver. xv+170 pp. (Black.) 2*s.* 6*d.*—This is the sixth published volume of an excellent series. Like previous volumes, this has pictures, bibliographies (which are a review of the authorities), and date summaries to each part into which the book is divided. If "the execution of Raleigh" is referred to in No. 11 (p. 32), the reference is not clear on the surface. A note would have been useful here.

With the Black Prince. A Mariner of England. With Marlborough to Malplaquet. By H. Strang and R. Stead. 160 pp. each. (Frowde.) 1*s.* each.—Three stories, the second about Elizabeth's time, the object of which "is to encourage a taste for history among boys and girls up to thirteen or fourteen years of age." The second paragraph of the short "note" in each is interesting. "If in these little stories historical fact treads somewhat closely upon the heels of fiction, the authors would plead the excellence of their intentions and the limitations of their space." They need not apologise. We think the books very good for their purpose. Each has four illustrations in colour and a map.

Geography.

A Rational Geography. By Ernest Young. 195 pp.; maps. (Philip.) 1*s.* 6*d.*—Notwithstanding the prejudice which may be created by the somewhat arrogant title of this little book, we can commend it as an interesting and useful addition to school geographies. It is to appear in three parts, of which No. 1, "Climate, British Isles, Europe," is already published. Parts ii. and iii., in addition to comprising the geography of the rest of the world, will include sections on physiography and map projections. The work is advertised as "a new work on the most modern lines," adapted at the same time to meet the requirements of the various public examinations as well as the Board of Education's regulations for secondary schools. The "modern lines" are well observed. There is plenty of cause and effect; there are useful sketch-maps; there are questions for oral work and exercises for note-books; and there is a sufficiency of matter for reproduction by the expectant examinee. So far, so good. But there are defects. There is no index; much of the commercial section is little better than mere list-writing; and there are mistakes. The Gulf Stream theory is wrongly stated; we recommend the author to read some up-to-date accounts before he publishes part ii., in which he promises to deal fully with the general subject of currents. Spain as a modern wool-producer is not important enough to merit Mr. Young's encomiums, nor is Corinth, except historically, worth advertising as an exporter of currants. Sir Walter Raleigh did not introduce potatoes into Ireland, nor are the best qualities of champagne made from *white* grapes. However, these are little matters (except that of the Gulf Stream), and the style of the book is, as we have said, quite commendable. It might be begun with boys of about twelve years of age. With it is published a pamphlet of eight pages on "Hints on Teaching Geography" (price 6*d.*), by the same author, wherein he makes suggestions as to what, in his opinion, are the best methods of carrying out the various exercises of his "Rational Geography."

Highways and Byways in Kent. By Walter Jerrold. With illustrations by Hugh Thomson. xx+448 pp. (Macmillan.) 6*s.*—Few counties can match Kent in historic interest or literary associations. It has first claim to the title of the Garden of England, and its orchards and hop gardens are well-known characteristics of its economic geography. Mr. Jerrold is not, however, concerned with geographical aspects and relationships, but with noteworthy incidents, places, and buildings, to all of which he brings the sympathetic mind and pleasant manner of the ideal guide. His pages are alive with people of the past, and the district around each of his centres of exploration is shown to be rich in human interest. The book is readable from beginning to end, and the pictures in it are remarkably fine specimens of Mr. Thomson's work. There is, unfortunately, little time for the enjoyment of such literature and art in school hours, but we can imagine no more suitable volume for leisure-hour reading. Kent has played such an important part in our history on account of its geographical position, extending from Dover in the south to London in the north, that this attractive story of its people, customs, and events will appeal to many readers. We give an illustration of a quintain still preserved on the village green at Offham. In Tudor times a bag of sand was hung from the loop on one side of the cross-piece, while the youth of that day used to exercise themselves and their horses by tilting at the broad end of the cross-piece. "He that by chance hit it not at all was treated with loud peals of derision; and he who did hit it made the best use of his swiftness, lest he should have a sound blow on his neck from the bag of sand, which instantly swung round from the other

Quintain on Village Green at Offham, Kent.

end of the quintain." The book, like others in the attractive series to which it belongs, should find a place on the shelves of many school libraries.

Mathematics.

Graphics applied to Arithmetic, Mensuration and Statics. By G. C. Turner. ix+388 pp. (Macmillan.) 6s.—For students of engineering, and to a less extent for every student interested in the practical applications of mathematics, the value of graphics is being steadily demonstrated. It is, of course, quite possible that the value of graphical methods by themselves is overestimated in certain quarters, and that the best results can only be obtained by a judicious combination of graphical and analytical methods; but the importance of the method is beyond dispute. The exposition of graphics given in the volume before us strikes us as possessing unusual excellence: the matter is selected with judgment; the numerous practical examples that are fully worked out lend special interest to the discussion; and the clear statement of the reasons for the various constructions adds very greatly to the value of them in the eyes of the serious student. The first two chapters contain a short but lucid treatment of graphical arithmetic and mensuration; chapter iii. treats of vectors and their application to velocities, accelerations, and mass-centres, these three chapters occupying about 120 pages. The remainder of the text, pp. 119–374, contains a very careful discussion of all the more important types of problems for which graphical methods are specially suited; the properties and construction of the link polygon and stress diagrams are very clearly set out and applied to many cases of practical importance. Numerous exercises, partly selected from current examination papers, add greatly to the value of the work, as giving the student the opportunity of testing his grasp of the subject by properly chosen examples rather than by examples constructed at haphazard by himself. All the diagrams are carefully drawn, and we have detected very few misprints and none of any serious importance. A good index is provided.

Constructions in Practical Geometry. By H. F. Westlake. viii+54 pp. (Philip.) 1s.—For pupils who wish to have a working knowledge of the more important constructions in elementary geometry, this collection will be useful, as the problems include most of those required in various elementary examinations. If judiciously used, the collection may be made instructive, but it would be unwise to make a course of this kind the basis of geometrical teaching, and we do not sympathise with the writer in his view of "giving in concise form the *minimum* required of candidates" in certain examinations.

Procédés de Calcul rapide. By Félix Martel. xvi+224 pp. (Paris: Armand Colin.) Paper covers, 2.75 francs.—It would seem as if in France, as well as in our own country, the practice of the teacher does not always conform to the official instructions. Though great stress is laid upon mental arithmetic in the programmes of the different types of French schools, it is found that the attainments of the pupils in this branch of their work are not so satisfactory in many cases as they ought to be, and M. Martel, whose official position gives weight to his opinion, has issued the book under notice with the view not only of directing attention to the subject, but of guiding teachers in their efforts to make their lessons profitable to their pupils. The general suggestions as to the spirit in which the lessons should be conducted are admirable; the amount of detail is, however, in our judgment excessive, though probably it is not intended that all the devices mentioned should be brought into use for any one set of pupils. Most of the abbreviative methods are well known, but the book contains much interesting detail that is not generally found in our text-books, and English teachers would profit by a study of the little volume, which is written in that simple and lucid style for which French text-books are so generally distinguished.

Science and Technology.

Plant Biology. By F. Cavers. xvi+460 pp. (Clive.) 3s. 6d.—The first glance at this book shows that it differs entirely from the commonplace text-books of elementary botany which are becoming so wearisome. The freshness of treatment, the provision of exact instructions for practical work really worth doing, and the consistent recognition that a plant is a living thing and no mere clothes-horse for the airing of technical terms, should secure for Prof. Cavers's book an instant welcome from teachers and students of the "new botany." The ecological side of the subject is kept well to the fore throughout, and receives special consideration in the final three chapters. A number of useful appendices on terminology, classification, &c., completes a book we can unreservedly recommend.

The Little Foresters. By Clarence Hawkes. 217 pp. (Harrap.) 2s. 6d.—One is involuntarily prejudiced against a book the paper covering of which announces that "this is a fascinating and wholesome book by a lover of animals from his childhood up." It is, of course, American. Mr. Hawkes's stories are good enough to dispense with such methods, and one soon forgets the offending cover in the pleasure of reading. Mr. Charles Copeland's full-page illustrations are, as usual, delightful. The book will make an acceptable gift for any young naturalist.

Nature Study and Brush Drawing. By W. Francis Rankine. 64 pp. (Cassell.) 3s. 6d.—"The need of suitable records," we are told in the preface of this book, "has induced the writer to adopt the brush as a ready medium in representing natural form accurately and rapidly. . . . The brush drawing is strictly auxiliary to the nature-study matter." The principle is an excellent one, but the drawings themselves—attractive though they appear at a first glance—show more evidence of rapid execution than of accurate observation, and seem the work of an artist rather than of a naturalist. The explanations facing the plates show a similar lack of first-hand knowledge of some of the animals and plants referred to.

The Bee People. xii+124 pp. (Methuen.) 3s. 6d.—This book, founded on Margaret W. Morley's work, gives in autobiographical style an interesting and simple account of the manner of life of the hive-bee. It is well illustrated, and would make an acceptable gift-book for a child.

Pedagogy.

Education in a Prussian Town. By Dr. H. M. Beatty. 54 pp. (Blackie.) 1s.—Dr. Beatty describes his brochure as an attempt to picture the education of a typical town in the paradise of education, and, as such, it well repays perusal. He selected Wiesbaden for his visit, and appears to have made a rapid inspection of the educational establishments from the gymnasium downwards. Happily, no attempt is made to burden the description with statistics, but a running commentary is kept up on all that the author observed. The sketch, though fragmentary, serves to convey a clear picture of the educational position of a fairly large Prussian town. Far from blindly worshipping, however, Dr. Beatty goes so far as to include illustrations, to use his own words, of the environ-

ment, the atmosphere, in which the great German educational machine revolves. In connection with the strict discipline observed he quotes at length from a Berlin school case, in which a judgment for defamation was obtained against a newspaper for an article dealing with the suicide of Berlin teachers. This lurid tale casts a sinister light on the ruthlessness of German methods. He also discusses the well-known comedy, "Flachsmann als Erzieher." Finally, in defining the essential difference between German and British education, the German is said to be deductive, the British experimental. Whatever may be the difference in the education, in the experience of the reviewer the British schoolboy, as a rule, possesses far more originality and individuality than his German *confrère*. The German system, however, has taught the boy to work and to love work for its own sake, attributes in which the average English lad is often deficient.

Jean Jacques Rousseau and Education from Nature. viii + 120 pp. *Pestalozzi and Elementary Education.* xi + 139 pp. By Gabriel Compayré. Translated by R. P. Jago. (Harrap.) 2*s.* 6*d.* net each.—Rousseau died in 1778 and Pestalozzi in 1827, and even now the central truth of the systems of education they unfolded are only beginning to be put into practice. Teachers and educationists generally have long offered lip homage to the vitalising principle on which these pioneers insisted, that children learn best by doing; but the profound modifying influence which a real understanding of this truth has upon class-room practice is understood only here and there. Widely opposed as they were in temperament and different as were their experiences, both these apostles of education realised and preached the comparative uselessness of mere didactic teaching. Rousseau said of his Émile: "He knows nothing of authority; he has acquired all his knowledge for himself. He has not been taught the facts themselves so much as the method of finding them out. He has been told to look, and he has found." And as M. Compayré says of Pestalozzi: "Pestalozzi, discarding books and suppressing the abuse of didactic lessons, aspires to placing the child in the presence of things." Those teachers who have not acquainted themselves yet with the contributions these eighteenth-century giants made to education should secure these appreciations, which they will find stimulating and suggestive.

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.*

Solution of Triangles.

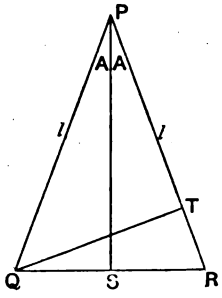
The method of solving a triangle, given two sides and the angle between them, to which attention is directed in the February number of The School World, was communicated to the *Mathematical Gazette* for May, 1903, by Prof. G. H. Bryan, F.R.S. A similar method of solution was suggested for the case in which the three sides are given. Various text-books which have been published since the above date have adopted one or other of those methods. Both methods possess the obvious advantage, which Mr. Hardingham mentions, of being readily understood by a pupil who has not advanced beyond the trigonometry of a single angle. Some care is required in the case in which the given angle is an obtuse angle, and beginners should be taught to work from the figure and use the cosine of the supplementary acute angle; they should also be taught to draw the figure, in any case, with the longer of the two given sides horizontal, so that the angle to be found may always be acute. (These are Prof. Bryan's instructions.)

The method referred to for solving the triangle when the three sides are given is extremely neat, and appears to be much shorter than the usual method; but I am inclined to think that the extra labour involved in finding all three angles by means of the tangents of the half angles is more than compensated for by the satisfactory verification of one's work which is secured by the independent determination of the three angles. Cecil Hawkins.

Haileybury College.

The "Sin 2A" Formula.

The following simple method of proving the "sin 2A" formula may be of interest:



Let PQR be an isosceles Δ, PS the bisector of vertical angle. Let vertical angle be 2A.

Let QT be perpendicular to PR. Let PR = l units.

Then area of PQR = SR × PS = $l \sin A \times l \cos A$
$= l^2 \sin A \cos A$

Also area of PQR = $\frac{1}{2}$QT × PR = $\frac{1}{2} l \sin 2A \times l$
$= \frac{1}{2} l^2 \sin 2A$

Equating these $\frac{1}{2} l^2 \sin 2A = l^2 \sin A \cos A$

$\therefore \sin 2A = 2 \sin A \cos A$.

This seems to me more easily remembered than the method usually given. Wm. J. Fearn.

Municipal Secondary School, Derby.

Geometrical Progressions to Infinity.

I have been very interested by Mr. Crawford's "Notes on Geometrical Progressions to Infinity" published in the March number of The School World; the ideas contained therein should prove useful, especially the "method of the square" and the "lattice-girder."

Personally, I have found a burette with stop-cock, the water-main and a large beaker more "dignified" than the tumbler, the jug, and the pail; and a strong permanganate solution more effectual than cold tea. Not that I count much on dignified methods. I once put before a class beginning geometry two blocks of wood, one painted red and one black, and half a pound of lard (!!), by means of which I illustrated "surface" and "line." The students certainly smiled, but they were *interested* and *understood*.

I found the "method of the triangle" far too difficult without the knowledge of Menelaus' theorem; the proof was so long that all interest in the G.P. was gone long before the end was reached. The "lattice-girder," formed of a double set of parallels, I make use of to construct rapidly a set of powers of any base A, thus obtaining a "scale" of logarithms when explaining the "slide-rule."

There are two points, however, in which I disagree with Mr. Crawford:

(i) I have come to the conclusion that such methods as Mr. Crawford describes are out of place, *except as illustrations*, to be given *after* rigorous algebraic proof. We have no right to argue "from the concrete to the abstract" when these terms mean concrete *number* and abstract *number*. For *counting purposes*, the algebraic numbers -3, $\frac{2}{3}$, $\sqrt{2}$ are every whit as imaginary as i^i.

(ii) I am absolutely certain that there is grave danger in the loose use of the word "infinity."

Mr. Crawford's "remark that these

$$[\text{the series A, } 1+\tfrac{1}{2}+\tfrac{1}{4}+\tfrac{1}{8}+\ldots \text{ ad inf.},$$

$$\text{and B, } 1+\tfrac{1}{2}+\tfrac{1}{3}+\tfrac{1}{4}+\ldots \text{ ad inf.}]$$

are different; the first is less than the second, from which its terms have been selected," assumes that the number of terms in the second ad inf. is "infinitely greater" than the number of terms in the first ad inf.

Mathematical masters would, I hold, generally do well to shelve "infinity," and follow such careful workers as Prof. G. A. Gibson in stating the sum, if any, of an infinite series as the "limiting value" when there is one (another suspicious word, but not quite so bad as "infinity") to which

$$1+\tfrac{1}{2}+\tfrac{1}{4}+\tfrac{1}{8}+\ldots+\frac{1}{2^n}$$

and

$$1+\tfrac{1}{2}+\tfrac{1}{3}+\tfrac{1}{4}+\ldots+\frac{1}{n}$$

respectively approach as n is indefinitely increased, and from which it can be made to differ by as little as one pleases, by taking n large enough.

Personally, I prefer to treat the infinite G.P. as an example of the simplest recurring series, with a scale of relation $1-x$; and, according to the text-books, show

$$S(1-x)=1-x^n;$$

incidentally summing the series the scales of which are $(1-x)^2$, $(1-x)^3$, $(1-x)(1-2x)$, &c.

These I (1) corroborate by division; (2) test with natural number substitutions; (3) illustrate by "graph" and "lattice-work" methods; (4) incidentally bring out rate of convergence by means of the different logarithmic series (assumed at this stage), and generally follow Mr. Crawford's ideas, but only as illustrations—concrete illustrations of an *abstract theorem of pure number*.

Finally, and not until several weeks' good work on series, in which the nth term is *always kept in view*, do I "increase n indefinitely" and obtain S_∞ as a "limit."

Technical College, Derby. J. M. CHILD.

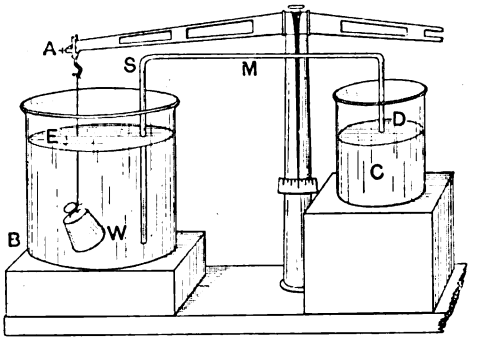
Method of Illustrating the Principle of Archimedes.

BEND a piece of glass tubing twice at right angles, S. On a specific gravity table place a beaker, B, containing the liquid to be experimented with. Place S as shown, held tightly by a retort clamp at M. Suck at the end of the shorter limb, D; the liquid siphons over until the level of the surface E is the same as that of the end of D.

Weigh a beaker, C (it simplifies matters for the smaller boys if C be taken clean and dry, the liquid which siphoned over at first being collected in some other vessel). Place C under D.

From the left-hand arm of a balance, A, hang any sort of solid of convenient size which is insoluble in the given liquid. It saves one weighing to use a hundred-gram weight. Completely immerse this solid, W, in the liquid in B in such a way that it does not touch the sides of B. Find the loss of weight of W, and also the weight of liquid which siphons over into C. These weights will be equal. Of course, no part of W must come above the level of the surface E during the experiment. Repeat the experiment, using various liquids. Then repeat, using a solid lighter than the liquid; the apparent weight of the solid in the liquid will be nothing.

In carrying out this experiment before a class use a large balance, and send one of the pupils to a smaller



balance to do the weighings of C. By fastening the siphon to the beaker with a clip matters are simplified, and the pupils themselves can do the whole series of experiments in a very short time. This is still more the case if we use the simple volumenometer sold by Messrs. Griffin and Sons, Ltd., and other makers, for about eighteenpence. W. CRABB.

Whitgift Middle School, Croydon.

The Training of Teachers.

I WAS glad to see in the February number of THE SCHOOL WORLD the protest raised by Prof. Armstrong against the exaggerated value attributed to the specialised training of teachers. If, as one of your correspondents states, the students are expected to have mastered thoroughly the tricks of the trade at the end of the first month, why is a long and arduous course essential?

I have been much impressed by the fact that at a university the students in training as potential teachers are expected not only to take a degree course—which itself demands all the time and energy they can give to it—but in addition to study a number of extraneous subjects. The inevitable result of this is that the minimum of time is devoted to each subject, and that no time is left in which they can acquire the one thing which, from my experience, seems to me essential for teachers: the power of grappling with difficulties as they present themselves. In studying scientific subjects, time is not available for the student to carry out experiments and to fail in them, to repeat and improve them until the difficulties are mastered. If the maximum of ground is to be covered in the minimum of time, the difficulties must be removed by the instructor, and the educational value of the course becomes infinitesimally small. How are average students, who have never acquired the habit of solving their own difficulties, efficiently to remove those of their pupils?

Surely the habit of mind developed in acquiring a more thorough knowledge, with a month devoted to learning the tricks of the trade, would prove more useful, especially if this were supplemented by classes of criticism or discussion for teachers of one or two years' standing, who would be more able to benefit by them.

One of the great dangers in modern education is the tendency to remove the pupils' difficulties before they arise. LOOKER-ON.

Chemistry as a School Subject.

Many science masters must have felt in reading the interesting discussion in The School World the expression of their own doubts as to the value of chemistry for young boys. To start with, the title strikes me as a trifle vague. It has often been asserted, and with considerable truth, that the nature of the curriculum should vary with the type of school and with the leaving ages of its scholars. Excellent as the subject may be in the upper forms of first-grade schools where the leaving age is nineteen, yet it seems to me that only doubtful benefit is derived in the grammar schools where the leaving age is sixteen. In fact, when one considers the time and expense which the subject involves, I very much doubt whether, in the present over-crowded state of the curriculum, the game is worth the candle.

No one can deny that the subject has a certain educative value, but can any of your correspondents point to any undoubted benefit to be derived from the study of it that is not equally to be derived from other branches of school work? Accuracy of hand and eye, the spirit of accuracy, practice in self-expression, all can be attained by the study of physics or of subjects like carpentry and art. Mr. Brett suggested that its chief value lies in "learning to weigh evidence and not to go beyond it," and in almost the same breath reminds us that in the hands of a good teacher history may serve the same purpose. Mr. Richardson's letter interested me greatly. He admits that below fifteen boys acquire little beyond a certain skill in manipulation, and that for boys between fifteen and seventeen it is "useless to say much about chemical theory." And then, when we reach that halcyon third period he talks about, our boys leave us.

There is an oft-repeated assertion that it leads the pupil to reason from step to step, to anticipate a reaction and confirm by observation, and that thus it trains his logical and reasoning faculties. I firmly believe that this is the great beauty of the subject, *if studied by those whose reasoning powers are already more or less trained*, but I do not believe that as many as 10 per cent. of boys below the age of sixteen can do so. They cannot reason on what is to a great extent an imaginative basis. They can see the logic of Euclid because they feel themselves on firm ground; they cannot see the logic of chemistry, for the unexpected confronts them at every turn. Personally, I have tried, and am still trying, to make the best I can of the subject, as that best is expounded by the educationists of the day. I have sampled the gravimetric and the qualitative method, and after all I cannot resist the conclusion that boys cannot grapple with the mysteries of nature, that their quantitative work at best is only approximately accurate, and still more that they have no faith in their powers of accuracy. You devise elaborate experimental proofs of your facts; your pupil conducts the experiments, you do the reasoning because he cannot, and he takes the result on trust—and speedily forgets it. Some points you cannot make clear to him. How are you going to make the *average* boy see why in some circumstances carbon dioxide and lime form chalk, while in others the reverse reaction takes place? He talks glibly about the effects of heat, and is quite satisfied; but is he any the better educated? The ideal class of ideally unnatural boys may perhaps ponder the problems of chemistry, but the natural happy-go-lucky individual with whom we have to deal does not bother himself with the unseen world of molecules and atoms.

To conclude, what the apologists of chemistry need to consider is this—are we justified in devoting to chemistry for junior boys that time and money which were far better spent in improving the teaching of our native tongue and of the now-too-much-neglected classics? Boys of fourteen or fifteen are not even fluent enough in the use of their own tongue to grapple with the complicated terminology of chemistry. The fact is, we are making a god of reason nowadays, and the older and sounder instruments of education go to the wall. Nothing has impressed me more than a remark I have often heard of late from parents and others: "You do not seem to make boys learn anything by heart as they used to in the past; I am sure their memories cannot be properly trained"; and I feel constrained to reply: "Never mind! Modern educationists want us to try to make an infant reason like an adult, and so, of course, they have no time for learning." If we are going to keep chemistry in our curriculum, let us frankly admit that we must make of it more or less a memory-training, such as the London matriculation syllabus seems to indicate, and leave to physics and mechanics or to botany that training in scientific method and that widening of the mental outlook that are the peculiar gifts of pure science.

C. H. Lockitt.

Solihull School.

Research in Local History and Geography.

May I direct the attention of your readers to the attempt which I am making, with the aid of a committee of working men, students of social science and others, to establish a large co-operative educational movement in the south of London for historical and geographical research, in which the researchers shall largely be working people themselves? By this means it is hoped to encourage such workers to become interested in local history and geography. As this movement aims at, among other things, the collection, centralisation, and organisation for reference of information in book or illustrative form, concerning historic, geographic, or social subjects, also to bring volunteers into touch with an educational work in which they are specially interested, it would be of the utmost service if sympathisers would send particulars of such data as they may have accumulated about Battersea (where a start is being made) or offers of help to the hon. sec., Mr. George Laundy, 209, Ebury Street, S.W. Written suggestions are also welcomed.

Huntly Carter.

The School World.

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The School World

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A PARENTS' EVENING.

By J. L. PATON, M.A.
High-Master of the Manchester Grammar School.

IT is not creditable to our national enlightenment that the parent should never be mentioned in matters educational, save in connection with acute religious controversy. It may therefore be of interest to know how parents may in other ways be brought into touch with teachers, and get some closer understanding of the motives and methods of the school curriculum and the corporate life of the school.

It should be remembered that the present generation has seen more changes than any of its predecessors in English secondary schools since John Colet founded St. Paul's. We teachers have been fairly continuously in touch with the schools from our childhood upwards; we have seen these changes gradually evolved, and therefore we fail to realise how wide-reaching and almost revolutionary they are in their sum total. This is quite natural to us. But it is also quite natural that parents who for twenty-five years or longer have had no touch with the schools should find some of the changes which have taken place rather perplexing, and, failing to understand the teacher, should fail also to support him as they might. Add to this the fact that in a large commercial and industrial city secondary education is now broadening down to a social stratum which has hitherto been untouched by it, and that consequently many of our parents have no personal experience of what secondary education is.

The Parents' Evening meets this need. It brings the parent into touch with the man who teaches his son, and contact is better than collision. Moreover, it enables the parent to see what the school is like, to learn that there is a reason for many things he does not understand, to see some of the products of the school work, to express freely any difficulties which he feels and hear the schoolmaster's point of view.

How is such an evening to be worked in practice? A record of our experience may be useful. I give it for what it is worth, and shall be glad to know of any way in which it may be, or has been, improved upon.

The invitation cards are issued in the name of a masters' "at home." We have a short concert to begin with, given by the school glee society and orchestra, several old boys assisting. The music helps to give an air of harmony to the whole proceedings; it gives parents a chance of seeing for themselves the value of the out-of-class pursuits to which the masters give up so much of their leisure; it gives special point to the endeavours of our young performers; and it is good for the boys themselves to act as hosts and entertainers in their school.

The concert is succeeded by an interval of forty-five minutes or longer for refreshments. Here again the boys make themselves useful by waiting on their guests, and polishing off afterwards anything that is left over. Parents are asked to make use of them by getting, through them, introduced to any master whom they may wish to meet. Masters are asked to wear cap and gown so as to be easily distinguished. The interval affords also an opportunity for parents to examine any little display of school work which may have been arranged. This year we had set out the exhibit which the school is sending up to the Franco-British Exhibition, and parents were able to see the work of the preparatory schools as it leads up to the work of the central school, and get a conspectus of the whole which is not easy to give in any other way. Next year we shall arrange a simple display of the English work done in all the classes from the lowest to the highest, showing the work of each class as a whole. The reason for this is that this year one of the parents, who had been reading Mr. Hartog's book, raised the question of the English teaching in the school; several others expressed interest in the matter, and this will give us an opening for showing next year the grading of the whole course, the sequence of the various classes, and the connection of the English work with the nature-study, the lecture scheme, the history, and so forth.

After the refreshments we adjourn to the conference proper. The invitation card invites parents to intimate beforehand any questions which they would like to raise, and invites them to take this opportunity of thrashing out in free discussion matters of common interest. In order to elicit as far as may be a frank expression of difficulties, no representatives of the Press are admitted.

What sort of questions are raised? At first, I must confess, the conference was rather a one-sided affair; it was more an address by the headmaster than anything else. But even so it was helpful to have a chance of talking more freely

and fully than is possible on speech day or at other functions. It gave one a chance of explaining confidentially the reason of any new change one was introducing. A change of curriculum nearly always involves a change of text-book, and a change of text-book is a thing which always evokes economic protest. One can explain why it is that the hoary tradition of Euclid has had to go by the board and more expensive geometrical instruments are required by the newer method; why nature-study is worth doing, even though we never had it ourselves when we were at school, and why it also involves a certain amount of expense in lens, forceps, &c. One can explain why one has had to make certain restrictive regulations as to bounds in the dinner hour, and why one has had to be very much "down upon" certain robustious, animal-spirited disturbers of the peace in trains. It is said that parents object to discipline; they do not object when they see the reason for it, and this conference gives the master a chance of explaining the reason which lies behind the rule, and putting the matter plainly from the school point of view.

There are, in fact, any number of texts on which to base a discourse. The parents themselves supply them. I keep a box in which I lay aside from time to time such letters as seem to supply a peg for a word of explanation. The box is quickly filled. I dip my hand in, and bring out such a letter as this: "Sidney has made up his mind to leave school at the end of the present term." Of course, in reading such a letter, no names are mentioned, but one can briefly point out the stupendous folly of letting a child be judge of what his education shall embrace, and how long it shall continue. One can show that what this really amounts to is that the experience and matured judgment of parent and teacher as to a child's real interests are allowed to count as nothing compared with the momentary whim of the child himself.

Again, "Mrs. W. takes this means of expressing her very strong disapproval of boys being allowed to return to school without being thoroughly disinfected; quarantine ought to be insisted on." This gives a glorious opening to explain how strict the practice of the school is in this matter; also, seeing how strict schools are, and how many other chances of contagion there are in tramcars, railway trains, churches, chapels, Sunday schools, and so on, where no precautions are taken, how unreasonable it is always to throw the blame on the one institution which takes all possible precautions.

"L. says you require further reason for his absence. I was under the impression that a note from his parents would be sufficient. Breifly [*sic*] —his friends in L—— were skating on Sunday. He was forbidden, and obeyed [underlined], and as a reward was given a day's holiday for skating." This gives a unique opening for straight speaking: the perversion of motive for obedience, the unfairness to other boys, the distinct breach of the school rule requiring previous sanction of the headmaster for any absence not caused by illness or bereavement, and the fact that this was one of the conditions subject to which the boy was admitted to the school. A man could not have a better opening than this, and the whole conference will be with you when you walk in and exploit the opportunity to the full.

Here, again, is a boy who turns up an hour and a half late with a note to explain that he was at the pantomime last night, and this on the first day of the new year term! Here is another that asks for exemption because of a bazaar or an annual meeting, which enables one to say much-needed things about religion and the common duties of life. Here is a note asking for a boy to be let out early so that he may go with his father to get some new clothes, or that he may celebrate his birthday with a *convivium tempestivum*, or because "he is taking part in a fancy dress dance, and should practise for it." Every headmaster knows the sort of letter I mean, and everyone can see how easy it is, when parents are assembled collectively, to show how impossible it is in the working of a large school to say "Yes" to such requests, how unjust it would be to the rest of the boys to grant them, what a letting out of the waters there would be if one began to do so, and how undesirable it is for both parties concerned that such requests should ever be made. Not the least valuable result of our Parents' Evenings has been that such a letter as I have quoted very rarely troubles me now.

One topic I find with myself is a hardy annual, and that is the question of games. The great obstacle to games in day schools is the mother's fear of her boy being hurt. Mothers always attend our conferences in large numbers, and one can deal faithfully with them. They have never been boys themselves; they cannot be expected to understand; one wants their co-operation; the trouble falls on them: one can therefore speak frankly about the dangers of a boy's adolescence, the need of training for his new impulses, the moral dangers of loafing and the moral value of those qualities which are developed by games and the corporate life. The success of our school camps is due entirely to the co-operation of our mothers. It is only right that the mother should know the men to whom she is asked to entrust her own flesh and blood, know what are the conditions under which he is to live, and what are the pursuits in which he is expected to take part. Our Parents' Evening in the spring term is supplemented by a parents' "at home" and a fathers' cricket match at camp, and the muster at camp has run well into three figures. Not only so, but the Governors have set apart a small room in the school for the special purpose of enabling masters on the staff to have interviews with parents. Each parent receives at the beginning of the school year a time-table showing the hours at which each master can be free for the purpose, and all he has to do is to send notice by his son of his intention, if possible on the previous day.

The questions raised by the parents themselves

are very various. The question of home work is always to the fore; the weight of the school books which a boy has to carry to and fro, and in this connection the best kind of school satchel; the methods of teaching drawing, modern languages or geometry; the question of Saturday detention; the school dinner; the date of the holidays; the school furniture; the risk of fire; handwriting and its bearing on business; the question of Greek pronunciation. These are a few of the subjects submitted for discussion by the parents themselves. There has been frank and straight-spoken criticism. That is exactly what one asks for. One does not wish to lay down the law; one wants to find better methods of co-operation for the common end.

Though there has been perfect candour on both sides, I have never known any malevolence shown, or even heat of temper, and I don't think there is reason to fear it. In any case, if there is any secret root of bitterness, it is much better to give it a chance of coming out into the open. Supposing there is bad blood, bottling it up leads only to rancorous fermentation, and no less harmful to the true interest of education is the alternative method of publicity, viz., the sensational letter to the newspaper and the subsequent controversy which runs its weary course like a political wrangle, with a maximum of heat and a minimum of light, leading finally to nothing but mutual exasperation. Parents will meet the teacher in the spirit in which the teacher meets them; as regards the boy we are masters, but as regards the father and mother we are no longer masters but fellow-workers. The spirit of co-operation is the best though unseen product of the Parents' Evening.

THE CHILDREN'S LITERATURE.

THERE lie before us the L.C.C. lists of books, (*a*) for libraries, (*b*) for prizes in the primary schools. Great pains have been spent on them and the result is admirable. All the care we can bestow on library lists is care well spent: for we are concerned in the primary schools with the brain *and heart,* not, indeed, of the nation, as some would have us suppose, but of a very important section of the nation. It is quite true that the teacher lives among enemies; that his work is challenged, scouted, undermined at every corner; and that only by trying to get children to play well and to read well can he hope to buttress up the walls built by his personality, his lessons, and his evident interest in children's welfare. But he is badly handicapped. Long ago, if he had been supported as he should have been by the will and goodwill of a nation that calls itself religious, he would have made cigarette-selling to children a punishable offence; instead, he has had to wait until harm untold has been done, and a firm tradition of cigarette-smoking has been established. Long ago, if he had been supported, he would have instituted a censorship of the juvenile Press —indeed, in nooks and corners he has done so— and the vilely vulgar boys' papers would have had to reform themselves, and to produce, which they might easily have done, real comedy for the schoolroom. Without being so foolish as to hope to abolish brigandage and gang-fighting among the young, he would, by means of some powerful association or some House of Commons Chrysostom, have put the police on the track of the penny dreadfuls, which apparently engender or at least encourage embryo hooliganism and child suicide. Indeed, he would not have been, as the public usually are, wise after the event. The teacher has all along been the person who by his very trade knew what was wanted: he has all along been the person who was not consulted.

There is no need to encourage the goody-goody book. Henty probably never did anyone any harm: he is brief, exciting, clean, and he does not wrap the propagandism of the Sunday school in a thin story and bind his book so as to represent a pair of cricket pads. Indeed, the principles of book selection are to the schoolmaster clear enough. First, he would avoid the sentimental, the religious, the mere colour and gold presents; all amorousness, prurience, mawkishness are anathema to him. Next, he accepts adventure but not horror, and he is queasy at any false heroics about crime. Again, he would treat the child more as a man, and would thoroughly agree with M. Anatole France in never writing down to the boy. He would have a very long index of forbidden books, and very likely he would put Shakespeare and the Bible in it. Lastly, he would everywhere print his school library catalogue, and would exchange it with catalogues of other teachers, English, American, and foreign, that he may see what is being done behind the mountains.

It is useless to regret that people no longer read the books of our infancy. We might as well complain that the shape of our hats has changed. Books belong to a day, a decade, a period, a century, a couple of centuries, and to all time; they belong to a clique, a school, a locality, a county, a country, to the East, to the West. If any book could ever without gross exaggeration be called a world-classic, the present writer does not know its name. And if we are brave enough to ask ourselves what it is we admired and still admire in earlier friends, we shall be forced to answer that it is *salience.* One great character, one sweet nature, one big scene has stabbed us— and we keep the scar. The fight in the dell, the print in the sand, the wreck close to the shore, the night scene in the wood, the supreme self-sacrifice then made for us our boyish likes. The book that has them not has faded, a thin, vapoury thing; our tenacious child memory could not grip it. It is exactly the same with the harmful books. The suggestive duologue, the erotic scene, the gorgeous crime, the picture in which the artist skilfully enough has by a fraction overstepped

the limit, the asterisk, the unfinished chapter—these are the things that stick more than any thick slabs of indecency.

The lists before us might be shorter, and the library list might contain more illustrated books: why should we all become hopeless slaves to the shilling? The L.C.C., in a half-hearted way, arranges its lists for young children and for older children; but either this should not be done at all, or it should be done as in Mrs. Clement Parsons's long list of suitable books, in which almost every year is catered for. The following friends are, we think, absent: D. Scott's "Ancient Mariner," reprinted by Nelson; Scott's "Pilgrim's Progress," "Don Quixote," Newnes's "Arabian Nights" and Andersen; all profusely illustrated, and all except the first o.p., except at the demand, say, of the L.C.C. There are few if any books on boxing, skating, kite-flying, fishing; there is no Boys' Badminton, and little in girls' games. No illustrated "Eothen" is here or in the market (though six editions of the book exist), and Sir Walter Scott has never yet been presented in right and proper form for a boy. Caldecott's ideal work and Miss Greenaway's children, if asked for, would soon produce the imitative artist. A shorter Bible, fully illustrated, is, to our shame, not in existence, though materials for it are super-abundant, accessible, and cheap. Illustrated ballads are absent; foreign folk-tales (*e.g.*, of the Maoris, of China, of Japan, of Australia), though published, are not on these lists; children's plays have no section devoted to them, and no bound copies of children's magazines seem to be suggested. Is the "Human Boy" (in two series) not a possible book? and why should not Bowdler's Shakespeare, that unwisely rejected volume, be mentioned? Where, too, are the good *new* atlases and *new* maps of London upon the index? The present writer would, for various reasons, put on the index all Ruskin, Macaulay's Essays, "Lyra Heroica," any shilling edition of "Ivanhoe," and Lamb's "Tales from Shakespeare."

One word as to prizes. Among them we find the plane and the saw; but why the really good knife (the L.C.C. might have a pattern knife made instead of buying what men are told to buy), the brace, and the hammer should be absent we cannot tell. Nor are tops, kites, and working models illustrating the laws of mechanics represented at all. There is no end to the extension and the value of such a fascinating section of the list—a demand might make the English model-maker bestir himself. But prizes cannot properly be bought *until it is known to whom the prizes are to go.* The sooner we get schools to take much more pains in the selection of the particular prize for the particular child who has gained it, the sooner will our prizes become real things.

It is said that it is easy to pick holes: it is a difficult thing to do in reading through these lists. The framers of them know their books and apparently know and love children; only a question or two remain. How many schools in England are without school libraries? How many, possessing such libraries, are continually changing their books? How many books from these long lists are available for each borrowing child? On the answers to these questions and others like them which teachers and children could easily supply depends the answer to the further question—is the school lending library a success?

COMMON FAULTS IN FRENCH PRONUNCIATION.

By S. A. Richards, B.A.
Hackney Downs Secondary School, London.

A SHORT time ago I acted as judge at an interesting and useful competition. A prize had been offered for the best French recitation. There were no restrictions as to age, and the boys were left to choose whatever piece they liked for recitation. One by one the competitors came before me, big boys and little boys, from all parts of the school. The selections ranged from a scene from Molière, a poem of Alfred de Vigny or Victor Hugo, to one of La Fontaine's fables. Some of the *déclamations* were dramatic, others tame; but what interested me chiefly was, of course, the pronunciation. On the whole it was good, but I was nevertheless struck by the frequency of certain errors, details of which might, I thought, interest other teachers of modern languages as well as myself. These errors were common to boys of different ages and in different parts of the school. Many of them were such as one would expect to meet with in English pupils, consisting in the substitution of approximate English sounds for those peculiar to French. There were others, however, whose *raison d'être* was not so easy to explain, but which were, nevertheless, fairly common.

I have tabulated some of the typical blunders for my own use. They serve as an indication of the direction which should be given to specially emphatic instruction in the class-room. The circumstances furnished, indeed, an exceptional opportunity for the observation of the particular kind of error into which a boy is most apt to fall when left to himself. Doubtless, all these mistakes are frequently corrected in class, but a boy who is under the direct supervision of his master is on his guard, while the occasion in question served to show what faults he is most likely to commit when removed from these restraining influences. A little more explanation and insistence on these points may therefore prove beneficial in curing these vices of pronunciation. The following is a tabulated list of the most noticeable errors.

1. [ou] for [o], [ei] for [e]. Diphthongisation of vowels was, as was to be expected, one of the most common failings, especially in the case of [o] and [e]. Thus *dispos* was pronounced [dispou], *dos* [dou], *donné* [dənei], or even [dəneij], &c. A

good exercise in this connection consists in the prolongation of the vowels in question. Let the class prolong the sound of [o] or [e] as long as possible. Singing the vowels to a scale, at intervals of a third, is also very useful. French songs are valuable for the same reason.

2. [s] for [z]. The frequency with which *s* between two vowels was devocalised was astonishing. Thus *désolation* was pronounced [desɔlɑ·sjɔ̃], *écrasé* [ekrɑ·se], *nerveuse* [nɛrvøs]. It is not enough to insist on the rule that *s* between two vowels is pronounced [z]; nothing but a suitable drill, repetition of lists of words picked for the purpose, will form the desired habit.

3. [ɛ] for [ə]. This was very common, as was to be expected. Thus *apprenait* was pronounced [aprɛnɛ], *premier* [prɛmje], *jetant* [ʒɛtɑ̃]. The habit of mentally separating a word into its syllables in pronunciation is the only safeguard against this. The principles on which words are thus divided should be thoroughly understood and such division practised by the pupil until it becomes a habit. He would not think of pronouncing *je* [ʒɛ], but he says [ʒɛtɑ̃] because he does not realise that the syllables are *je-tant*. Words should be read in class with a distinct pause between the syllables, thus: ve-nir, pre-mier, pré-é-mi-nant, dé-bâ-cle. It is really wonderful to notice how this habit of correct syllable division smooths down the difficulties of pronunciation.

4. Omission of [r]. This was, perhaps, the commonest fault, and naturally so. *Cor* was pronounced [kɔ:], *porte* [pɔ:t], &c. The first step towards remedying this peculiarly English failing is to get the pupil to realise that, in his own language, the *r* is never sounded except before a vowel. He won't believe this at first; he will triumphantly point out that *bust* and *burst* are not pronounced alike, and that the *r* therefore must be pronounced in the latter. Here is the chance the teacher wants. If he can show that the function of the *r* in such a case is merely to alter the vowel while it remains silent itself, and that the French *r* never does this, leading the pupil on to distinguish between the sound and the symbol in English orthography, then he will have swept away many difficulties and misconceptions. Practice drill will do the rest.

5. [wi] for [ɥi]. This was a common mistake. Thus, *reluisant* was pronounced [relwi·zɑ̃], *épuisé* [epwi·ze], *cuivre* [kwivr]. Probably no sound gives the teacher more trouble than this. Very few English people, with the exception of those who have been phonetically trained, ever pronounce it correctly. Indeed, they do not notice any difference between [ɥ] and [w] when they hear them. *Lui*, [lɥi], and *Louis*, [lwi], sound alike to their ears; they give the latter pronunciation to both for the simple reason that it exists in English pronunciation, while the former does not.

The first step is to distinguish clearly between [u] and [y], arriving at the latter from [i] by rounding the lips without moving the tongue. Then add the sound [i] to each; [ui] will naturally develop into [wi], and [yi] into [ɥi]. Now introduce examples such as *Louis*, *lui*; English *sweet* and French *suite*. When once the difference of tongue position is felt, the distinction will be made naturally.

6. Defective [y]. I noticed two varieties; the substitution of [u] was the more common. For example, *autruche* was pronounced [o·truʃ], *vu* [vu], &c. The other variety I have not often met with; it consisted of the substitution of [i]. *Sur* was pronounced [si:r], *pur* [pi:r]. These two errors, taken together, show that the real difficulty in the sound [y] for English people lies in the *combination* of a high-front tongue position with lip-rounding. In the first case, the lip-rounding was present, but the tongue had the high-back instead of the high-front position; in the second the tongue position was correct, but the lips were not rounded. The best practice is that of rounding the lips to their fullest extent *during* the actual production of the sound [i] This may be followed by the converse process: starting with [u] and advancing the tongue to the [i] position, keeping the lips rigid.

7. A far stranger mistake, but one that does occur, though rarely, was that of substituting [y] for [u]. The boy in question had evidently mastered the former sound, and applied it *à tort et à travers* to *ou* and *u* alike.

8. [ɔ] was often substituted for [o]. This was unexpectedly common. Thus *pauvre* was pronounced [pɔvr], *aucun* [ɔkœ̃]. To correct this confusion it would probably be sufficient to emphasise the rule, *au* is pronounced [o] except before *r*, when it gives the sound [ɔ].

9. [ɔ̃] for [ɑ̃], a very common error. Thus *pendrai* was pronounced [pɔ̃·dre], *étranger* [etrɔ̃·ʒe]. Clear ideas on this point are essential. The pupil should be taught that *am* and *em* before *b* or *p* or when final, *an* and *en* before any consonant or when final, give [ɑ̃], while the sound [ɔ̃] is represented by *om* final or before *b* or *p*, or by *on* final or before any consonant. The distinction between [ɑ̃] and [ɔ̃] may well be exaggerated at first.

10. [ɔ] for [u]. This was fairly common, especially before *r*. The word *pour* is the chief sufferer; there is always a tendency to pronounce it [pɔ:r]. The thing to insist on is that a vowel is not affected by the following *r* in French; *e.g.*, *pu*, *pur*; *ri*, *rire*; *pou*, *pour*. Contrast with this such English examples as *he*, *here*; *tube*, *disturb*.

11. [ŭl] for [l]. The substitution of [ŭl] for syllabic *l*, [l], was fairly common, on false analogy with English, of course. Thus *impossible* was pronounced [ɛ̃·pɔsibŭl], *faible* [fɛ·bŭl]. Words ending in *le* preceded by a stop need special attention. It should be made clear that no vowel sound may intrude between the stop and the *l*. The best method of practising such words is to divide them into their syllables, pronouncing each separately and distinctly, and sounding the final [ə]; thus *impossible* [ɛ̃-pɔs-si-blə], *table* [ta-blə], &c.

12. [a] for [ɑ], and *vice versa*. The confusion between [a] and [ɑ] is bound to arise unless the rule and its exceptions are mastered. (See Passy, "Abrégé de Prononciation Française," § 41.) Thus *nation* was pronounced [nasjɔ̃], *passion* [pasjɔ̃], *pas* [pa]. The pupil should at least understand that French *a* is

pronounced [a] as a general rule, and that this is always the case before *r*; *e.g.*, *Charles* [ʃarl], *garçon* [garsɔ̃]. He may then proceed to study the exceptions; *e.g.*, *â* is pronounced [ɑ], except in the verbal endings *-âmes, -âtes, -ât*; *a* is pronounced [ɑ] in the terminations *-as, -ase, -ation, -assion*, and in certain words such as *sable, cadavre, sabre, miracle*, &c.

13. *oi* was variously mispronounced [o], [ɔi], &c., while the distinction between [wa] and [wɑ] was often ignored. The simple rule, *oi* gives [wa], except after *r*, when it is pronounced [wɑ], is worth insisting on.

14. False liaison was a noticeable failing. Boys are apt to overdo this when once they have acquired the habit. Passy gives useful rules on this subject, though they represent, perhaps, the minimum of actual practice. The rule that, in liaison, final unvoiced continuants become voiced, while final voiced stops are devocalised, should be made clear. Examples: *neuf heures* [nœv œ:r], *dix hommes* [diz ɔm], *une longue addition* [yn lɔ̃:k adisjɔ̃], *un grand homme* [œ̃ grɑ̃t ɔm].

15. Defective stress on analogy with English was common. The following are examples, the stressed vowel being printed in heavy type: à minuit demeuré, ces bruits prophétiques; précédaient, asseoir, mélancolique. A good working rule is this: the stress normally falls upon the last sounded syllable of a French word, but when displaced for the sake of emphasis, it falls on the first syllable beginning with a consonant. The difference between English emphasis (reinforcement of stress) and French emphasis (displacement of stress) should be clearly explained.

Throughout the recitations the necessity for the explanation of phonetic principles, for systematic phonetic drill and reading from phonetic script, as well as for their continuance into the higher forms, was manifest. Boys who had not had the advantage of phonetic instruction at the start were obviously at a great disadvantage, while the tendency for pronunciation to deteriorate when the pupil has passed beyond the sole use of phonetic script, and when the study of phonetics forms a smaller fraction of his instruction, was also evident. Probably the most correct pronunciation was that of a little boy in his second term of French. His knowledge of the language was not equal to the intelligent rendering of his piece, which proved rather beyond his powers, but the influence of the phonetic version which he had evidently followed made itself felt in an almost too studied correctness of pronunciation. The difficulty is evidently felt at the point when phonetic knowledge has to be applied to conventional orthography, and it is at this point that teaching is apt to be weak. Much of the initial labour spent in getting the correct sounds from the class is wasted if it is not clearly shown how these sounds are to be applied to the ordinary spelling. French orthography is not scientific or phonetic, but it is sufficiently so to render it necessary to teach the general principles involved. It is of little use, for example, to teach a boy to produce correctly the sound [ɛ] if we are going to leave him there. How is he to know when to use this sound? If, however, we proceed to show him that the sound [ɛ] is represented in spelling by *è, ê, ai* (except in the verbal ending *ai*), *ei, e* followed by two consonants, and so on, we shall enable him to make a practical use of his knowledge. In other words, the principles of orthoepy must be systematically taught. Let the teacher study Passy's "Les Sons du Français" or "Abrégé de Prononciation Française," especially §§ 40–85, while, for practice drill, the class may make use of some such book as "French Speech and Spelling" (Dent).

LABORATORY BOTTLES.

By HUGH RICHARDSON, M.A.
Bootham School, York.

MOST of us have seen, many of us have suffered from, a chaos of bottles in a chemical laboratory. The medley of bottles which collects in an old laboratory—with their variety of shapes, colours, and sizes—seems to defy any system of orderly classification or arrangement. The clean sweep made by a fire and the necessity for new purchases allowed the writer some eight years ago to consider the possibilities of rearrangement.

The object of any arrangement of bottles is to *save time*—boys' time and masters' time—both in finding bottles and in putting them away. The chaos of some laboratories is largely due to the insufficient space allowed. There should be sufficient linear length of shelving to allow the label of each bottle to be seen separately. A common system of classification is alphabetical, the aluminium, ammonium, and antimony compounds taking precedence of others; but where chemicals are kept in the bottles in which they arrive this results in the juxtaposition of bottles of very different sizes.

We have tried to keep as few different patterns of bottles as possible; then (1) the shape of the bottle indicates the set of shelves on which it is kept; (2) each bottle is plainly and permanently labelled and (3) numbered; (4) corresponding numbers are painted on the shelves; (5) the numerical order is roughly alphabetical; and (6) a framed and printed reference list hangs beside the bottles.

The length of shelving that will ultimately be required for bottles is apt to be greatly underestimated in planning laboratories. We have in use some 60 ft. for glass bottles containing solids, and 50 ft. for bottles of solutions. We require about 30 ft. for stoneware jars, and have not got the 60 ft. we need for Winchesters. The benches are not supplied with the usual sets of qualitative analysis reagents

Wise advice has been given to those planning laboratories not to stint expense in bottles or in retort stands, but to get both good, in uniform patterns and in quantity. I tried to ascertain how many bottles to order at first, but could get no trustworthy advice. We have now about 120

glass bottles permanently labelled for solids and 80 for liquids in general use, besides similar bottles in occasional use or in reserve, and stoneware jars and Winchesters to hold larger quantities.

Much confusion has been saved by asking the firm supplying our chemicals to use only bottles of certain specified patterns when bottles are necessary for packing chemicals. Of substances that come in paper parcels, the quantities ordered are generally such that the laboratory bottles can completely contain them. Any odd bottles which may get into the laboratory are easily disposed of either gratis to the boys or profitably to a neighbouring druggist.

Some inquiries made before buying bottles will show that cheapness is not the only consideration. English flint glass is stronger than some of the cheap Continental makes. Hand-made bottles have cooled more slowly than the very similar bottles blown into moulds. The accurate fitting of stoppers is hardly shown by a price catalogue. Square-headed stoppers have the advantage that they can be held in the back of the fingers. The broad flat-headed stoppers protect the neck of the bottle from dust, and are kept clean by placing them upside down on the bench. If the stoppers are numbered to correspond with the bottles, accidental interchanges can be put right.

A good type of bottle for liquids is specified as "round, shop, hand-made, narrow-mouth, white, 20-oz. size, square-head stopper." The price is 10*s.* per dozen, or when labelled by sand blast, numbered, and stoppers numbered to match, 1*s.* 6*d.* each. Amber glass is necessary to protect sulphuretted hydrogen, silver nitrate, and ammonium sulphide. Rubber stoppers may be substituted for glass in the bottles for potassium and sodium hydrates and carbonates, in which glass stoppers are apt to become fixed.

Some wide-mouth Bohemian glass bottles for dry chemicals which are on the market have much to recommend them, but my experience of the 16-oz. size has been that when filled with hard substances like pyrites, calc spar, or rock salt, and used by boys, the bottles are not quite strong enough. It is the more troublesome when carefully labelled bottles are broken, because much careful description is necessary to get them exactly replaced.

For larger quantities of dry chemicals the "patent air-tight stoneware jars," 6-pint size, are very convenient. But if the lids are not kept closed, and damp air creeps into salt, quicklime, and some other substances, the jars may be cracked by the expansion of their contents.

For larger quantities of liquids, ½-gallon Winchesters prove useful, a more than sufficient supply being found in the bottles which arrive containing strong acids.

In many laboratories where the same men work all day and every day, individual bottles become familiar, and no doubt trouble may be saved by keeping things in the bottles in which they arrive. If these bottles were numbered by the interpolation method of the decimal library catalogues, they might easily be kept in places. But in a school laboratory, with large classes working short hours and a continual succession of new boys, some much simpler and clearer plan is almost necessary. Labels must be very clear, and if labels fade or fall off there will be much troublesome delay in the all-too-short working periods. I have struggled with gum labels, in printed books and perforated sheets, with auctioneers' lotting numbers, and with the after-application of paraffin or of size and varnish; but if I can help it, never again. An exception may perhaps be made in favour of the "Primus indestructible labels" when it is necessary to improvise a set of labelled bottles at short notice; for instance, for boys doing qualitative analysis. For analytical purposes there was on the market a set of 8-oz. bottles of American origin with labels moulded in relief. Delay in delivery may discourage orders for this cheap and useful set. Enamel labels are very clear and permanent, but rather too expensive. I have chosen sand-blast labels, made rather rougher (*i.e.*, by coarser sand grains) than those usually supplied. The rough surface gets slightly dirty with use, and this makes the letters more legible. For temporary labelling a good supply of blank gum labels should be kept. Either lead pencil or blue chalk lasts better than ink, which quickly fades in the laboratory atmosphere.

When qualitative analysis was the only sort of practical work, we all knew for what substances bottles would be required. The list of reagents for general use was printed under Subject X.p. Inorganic Chemistry (Practical) in the "Science and Art Directory." This familiar list is no longer to be found among the Board of Education "Syllabuses and Lists of Apparatus." The greater freedom now allowed prevents one stereotyped list from satisfying everybody. Roughly, the old list is still required, but additions are needed. A very full list and much good advice on preparing solutions will be found in "Practical Chemistry," by Clowes and Coleman, p. 475. See also Treadwell and Hall's "Analytical Chemistry," vol. i., p. 30.

Where a laboratory is used for general scientific work and not for chemistry only, the list of substances stored may include stains and culture solutions for botany, resin and chromic acid for electricity, clay, soil, sand and minerals for physiography, &c.

Certain dangerous substances should be kept under lock and key, and if these bottles are marked with scarlet labels they are easily noticed when out of place. Such are the more deadly poisons—cyanide, arsenic, mercury salts, oxalic acid, chloroform, and also inflammables and substances likely to lead to explosions, gunpowder, magnesium, potassium, sodium, ether, benzene and carbon disulphide. Phosphorus I keep in an iron safe in a room with a concrete floor. Charcoal is a still greater danger if put away red-hot after blowpipe work in a wooden box; I think it is safe in an air-tight stoneware jar.

If the laboratory stands open for boys to work there in the absence of a master this list must be increased by a rather curious collection of substances which had better be withdrawn from free use for still more curious reasons. About the beginning of November it is wise to keep an eye on the materials for fireworks: sulphur, chlorate, and nitrate. In June bicarbonate of soda, citric and tartaric acids need hardly be supplied for effervescing drinks. Pyrogallic acid and perhaps a few other substances tempt photographers to peculate. Some of the more expensive chemicals—silver nitrate and platinum chloride—are too valuable to be left to the wasteful ways of boys, who will use potassium iodide at 1*s*. per oz. as freely as potassium nitrate at 1*d*. per lb. The purer qualities of zinc and some other chemicals may be reserved for the same reason. Lead shot is used for peashooters and mercury pellets to play with, if freely supplied. Sugar is eaten if not locked up among the poisons. Calcium carbide is controlled to limit the smut-fall in the laboratory. All such troublesome substances must be in some way reserved so that they shall not be used without leave.

THE TEACHING OF ENGLISH IN AMERICAN HIGH SCHOOLS.

By W. H. Winch, M.A.

I.

POPULAR opinion in England regards the United States as a land in which English is spoken with an unsatisfactory accent, and where quaint, unhistorical views of spelling are maintained under the title of "Spelling Reform." It is by no means adequately realised that the American is proud of his literary heritage and that, in his schools and colleges, he uses the great writers of English as a most important means of culture—I had almost written "as the principal means of education," and the phrase would scarcely be an exaggeration.

There is little doubt, though I was not at first disposed to grant this American claim, that, though distances are enormously greater, there is less dialectical variation than in our own country; and among sections, at least, of the academic and scholastic classes, there is a preciseness and choice about their English speech which is becoming less characteristic of corresponding classes in this country.

If an unbiassed European were asked which country in the world cared most for the English language, his answer, if based upon the provisions for its teaching in the school system, would certainly not be "England"; it would be, I think, "The United States of America." From the very commencement of school life the greatest stress is laid upon it. Dr. Harris wrote, "I do not think there is much ground for dispute as to the order for the elementary studies. Reading comes first, for by it the pupil becomes able to pursue independent study, and thus to add to what he receives orally from his teacher." Though there are indications that a more realistic view of early education is gaining some ground in America, yet this opinion of the late Commissioner is the one which remains crystallised in official syllabuses and time-tables. It would astound an American teacher to tell him that, among our own teachers, it was by no means uncommon, a few years ago, to hear that "English can take care of itself." In schools of every kind the time given to the subject is greatly in excess of that given in corresponding schools of this country; and, though America is the land of elective (optional) studies, it is rare indeed not to find English, and much of it, compulsory throughout the course, whether in elementary or high school, normal school or university. Nor is the pupil's introduction to the masterpieces of English literature delayed, as is generally the case with us, until he reaches the high school. In one city the official instructions for elementary teachers read:

> Teachers are reminded of Ruskin's classification of "books for the day" and "books for all time." Devote most of the time to those of the latter class.
>
> If the child were reading over and over the great literature which he will never forget, in place of the little literature which he will never remember, how immeasurable would be the difference in the furnishing of his mind.

In another city the syllabus for one of the grammar grades requires, in the ordinary and definitely prescribed course, exclusive of the supplementary reading which is more loosely prescribed, selections to be read from the following authors: Freeman, Hunt, Moore, Beecher, Bryant, Seward, Lamartine, Newman, Lincoln, Wolfe, Kingsley, Burns ("Cotter's Saturday Night"), Blaine, Hood, Webster, Taylor, Tennyson ("Enoch Arden" and "Lady Clare"), Dickens, Schneckenburger, Kly.

But, as has been pointed out in a recent American report, though the words of some of these authors are not necessarily too difficult for pupils to pronounce, the thought is often too difficult for them to grasp, the philosophy is beyond their experience, the humour is too subtle. We must not therefore suppose that the boy or girl who enters the high school, which, in the United States, is organised "end on" to the grammar school, has in actual possession quite such a store of good English as one might infer from some of the syllabuses. Still, as compared with our own children who leave our elementary schools at the same age, namely, about fourteen, he is decidedly well equipped. He can, moreover, compose well in English, in some cities very well; though in composition, as well as in the correctness of the spelling, there is very great diversity from town to town and from school to school.

Nor has that reasoned analysis of the functions of words, which is the very soul of grammatical teaching, been overlooked. Though much difference exists as to the success with which this

is actually done, yet at its highest level the work in English grammar which is required for graduation[1] is both extensive and difficult. Even the capacity to use such a book, for example, as the text-book in English for the highest grammar grades in New York implies a very high standard of attainment.

The American high school, which receives the pupil after he or she, mostly she, has passed through the primary and grammar grades, has a course which is almost invariably a four-year one. Its pupils enter at from fourteen to fifteen years of age and finish the course at eighteen or nineteen. Though many, indeed most, of the studies are elective, English is compulsory, and in the overwhelming majority of cases takes the first place. In New York high schools it receives in the first year five compulsory periods weekly and three in each of the remaining years; no other academic subject is compulsory throughout the course, and this is true of all the high schools, whether of the ordinary, or commercial, or manual-training type. In Boston Latin High School the six-year course gives respectively six, six, five, four, four, and two periods a week to English, though this school probably presents as near an approach to a classical curriculum as any public high school in America, whilst the other high schools of Boston are found including English as a prescribed study for the first three years. The importance attached to it is shown by the number of points which it counts towards graduation. In Massachusetts, indeed, *English* High School is by no means an uncommon term.

Chicago high schools give four periods a week during the whole course, and English is practically compulsory throughout for those who wish to pass on to normal school or university, though it may not be definitely prescribed. How few secondary schools could be found in England where so much time is given to the native language!

But the teaching of English is not simply dependent upon the time given to it: one needs to know what the syllabuses are, how the subject is taught, and with what results. Let me first deal with the course of study.

The outline of the Chicago course is:

First Year.—Classics, grammar, composition, rhetoric.

Second Year.—As above.

Third Year.—As above, with history of literature added.

Fourth Year.—As for the third year, with the omission of grammar.

The plan of study for the first two years at Cambridge, Massachusetts, says, perhaps significantly, "English (*including spelling*)," though the reference to spelling is subsequently omitted.

Not only, however, are the number of hours per week prescribed and the general plan of study issued to the teachers by the local authority; there are also official syllabuses for all, or almost all, the subjects of instruction; they are certain to be found in every highly developed school system in America. It will be profitable to give one at least of these, and I have chosen that for New York, which seems, whilst retaining most that is characteristically American, to avoid that inflation of tone which sometimes mars an otherwise excellent syllabus.

FIRST YEAR.—*First Half.*

LITERATURE.—Books should be selected, first of all, for their wholesome interest to boys and girls. They should be chosen, also, with a view to multiply the student's interests and thus prepare him to read other books to advantage. Some, for example, may treat of chivalry, some of romance, others of history, and still others of the classic myths and mediæval legends.

Required for reading.—One from each of the following groups: I. Byron, "The Prisoner of Chillon," "Mazeppa"; Coleridge, "The Ancient Mariner"; Macaulay, "Lays of Ancient Rome"; Lowell, "The Vision of Sir Launfal." II. Scott, "Ivanhoe"; Dickens, "A Tale of Two Cities"; Gaskell, "Cranford."

Suggested.—Narratives in both prose and verse by various authors—for example, Scott, Cooper, Tennyson, Hawthorne, Longfellow, Whittier, Stevenson, and Kipling—and a good translation of the "Iliad" or the "Odyssey."

COMPOSITION AND RHETORIC.—Students should write many compositions. While the criticism of the teacher must be concerned with matters of grammar, spelling, and punctuation, it should be largely constructive.

The work of the term shall be as follows:

1. Letter writing, with attention to substance as well as to form.

2. Short themes, both oral and written, based on the experience of the student and on the literature of the term. Emphasis shall be laid on narration.

3. A review of capitalisation and of the simpler principles of punctuation. Elementary study of the principles of unity and coherence as applied to the whole composition and to sentences in compositions.

GRAMMAR.—The analysis of easy sentences and the application of the principles of grammar in composition.

FIRST YEAR.—*Second Half.*

LITERATURE. *Required for Reading.*—One from each of the following groups: I. Emerson, "Selected Essays"; Irving, "Sketch Book"; Lamb, "Essays of Elia." II. Browning, "Cavalier Tunes," "The Lost Leader," "How they Brought the Good News from Ghent to Aix," "Evelyn Hope," "Home Thoughts from Abroad," "Home Thoughts from the Sea," "Incident of the French Camp," "The Boy and the Angel," "One Word More," "Hervé Riel," "Pheidippides"; Tennyson, "Gareth and Lynette," "Lancelot and Elaine," "The Passing of Arthur"; Palgrave, Golden Treasury (first series), book iv., with special attention to Wordsworth, Keats, and Shelley.

Suggested.—Descriptive literature by various authors

[1] Graduation in America means the successful completion of any recognised educational course. I am not sure that a child cannot graduate from the kindergarten; he can certainly do so from the primary grades (the lower standards). In this case it means graduation from the elementary school.

(for example, Hawthorne, Lowell, Gray, Goldsmith, Poe, Blackmore, Burroughs, and Irving).

COMPOSITION AND RHETORIC.—The work of the term shall be as follows:

1. Short compositions, both oral and written, based on the experience of the student and on the literature read. Emphasis shall be laid on description. The subjects chosen should be simple in character and should relate to what the student has seen in real life or in imagination.

2. Elementary study of unity and coherence in the composition and in the sentence. The function of the paragraph.

GRAMMAR.—Continuation of the work of the previous half-year.

SECOND YEAR.—*First Half.*

LITERATURE. *Required for Reading.*—One from each of the following groups: I. The Sir Roger de Coverley Papers in the *Spectator*; Bunyan, "The Pilgrim's Progress," part i.; Franklin, Autobiography. II. Shakespeare, "As You Like It," "The Merchant of Venice," "Twelfth Night."

COMPOSITION AND RHETORIC.—The work of the term shall be as follows:

1. Short themes, both oral and written, of various types. Emphasis should be laid on exposition. The subjects chosen should be for the most part concrete, carefully limited, and within the student's experience. Practice should be given in defining terms.

2. Further study of paragraph structure with respect to unity, coherence, and emphasis; the use of the topic sentence; connectives; the methods of transition.

GRAMMAR.—Study of tenses and moods, their distinctions and meaning; consistency in their use in composition.

SECOND YEAR.—*Second Half.*

LITERATURE. *Required for Reading.*—One from each of the following groups: I. George Eliot, "Silas Marner"; Goldsmith, "The Vicar of Wakefield"; Hawthorne, "The House of the Seven Gables." II. Goldsmith, "The Deserted Village"; Palgrave, Golden Treasury (first series), books ii. and iii., with special attention to Dryden, Collins, Gray, Cowper, and Burns; Pope, "The Rape of the Lock."

COMPOSITION AND RHETORIC.—The work of the term shall be as follows:

1. Short themes in narration, description, and exposition.

2. Elementary argumentation, oral and written, based upon questions familiar to the student. Students should have practice in framing propositions on topics of interest to them, in defining terms, and in differentiating introduction, proof, and conclusion. Emphasis should be laid on the distinction between assertion and proof.

3. Kinds of sentences: long and short, periodic and loose, balanced, rhetorical question, &c. Variety in sentence structure. Unity, coherence, and emphasis in the sentence.

GRAMMAR.—Continuation of the work of the previous half-year, with emphasis on connectives and the various functions of phrases and clauses.

THIRD YEAR.—*First Half.*

LITERATURE. *Required for Reading.*—One from each of the following groups: I. De Quincey, "Joan of Arc" and the "English Mail Coach"; Bacon, Essays; Ruskin, "Sesame and Lilies." II. Shakespeare, "Henry V.," "Julius Caesar."

COMPOSITION AND RHETORIC.—The work of the term shall be as follows:

1. Short themes of various types.

2. Narration, which shall include anecdotes, historical sketches, biographical sketches, and stories with simple plots.

3. Continued study of exposition and argumentation which shall include the study of various methods of paragraph development and shall be pursued with increasing insistence on unity, coherence, and emphasis in the paragraph.

4. Study of diction; synonyms and autonyms; specific and general terms; words frequently confused.

GRAMMAR.—Study of the various functions of the infinitive and the participle.

THIRD YEAR.—*Second Half.*

LITERATURE.—A review of the books read in the preceding terms, with some attention to the literary history of the epochs which they represent.

NOTE.—This prescription for the sixth term may, if preferred by any school, be postponed until the eighth term, in which case the work prescribed for the eighth term shall be given in the sixth.

COMPOSITION AND RHETORIC.—The work of the term shall be as follows:

1. Short themes of various types.

2. Description: the requirements shall show a distinct advantage over those in the first year in variety of subject and method of treatment. Description of persons, of landscapes, of buildings, of scenes of action, and descriptions from both fixed and moving points of view are all illustrations of the variety of the problems that may be assigned.

3. Continued work in exposition, which shall include at least one theme of some length carefully developed through a preliminary outline, and demanding clear explanation of a somewhat complex, though familiar, object of first-hand knowledge.

4. Continuation of the study of diction, especially in connection with work in description. Further study of the structure of the whole composition and of the methods of paragraph development.

GRAMMAR.—A systematic review of the principles of English grammar.

FOURTH YEAR.—*First Half.*

LITERATURE. *Required for Study.*—Burke, "Speech on Conciliation with America," or Washington's "Farewell

Address," and Webster's "First Bunker Hill Oration"; Shakespeare, "Macbeth."

COMPOSITION AND RHETORIC.—The work of the term shall be as follows:

1. Short themes of various types.

2. Paragraphs illustrative of elements in argumentation; *e.g.*, an appeal to the interests of an audience, the clear statement of a question, various methods of developing proof, summaries of proof, &c.

3. At least one argument of considerable length, developed through formal introduction and brief. The work should demand more of the students than did the argumentation of the second year. The topics chosen should deal with such questions of the day as are well within the grasp of students.

4. A review of the principles of unity, coherence, and emphasis in sentences, paragraphs, and compositions.

GRAMMAR.—The study of grammar continued in connection with the work in literature and composition, with special attention to the simpler idiomatic and elliptical expressions of standard English.

FOURTH YEAR.—*Second Half.*

LITERATURE. *Required for Study.*—Milton, "Minor Poems"; Macaulay, "Life of Johnson," or Carlyle, "Essay on Burns."

COMPOSITION AND RHETORIC.—The work of the term shall be as follows:

1. Themes of various types.

2. A composition of considerable length. The student should have perfect freedom in the choice of literary form and be expected to express himself correctly and forcibly in clear, idiomatic English. This production should be a thorough test of his ability to write.

GRAMMAR.—Continuation of the work of the previous half-year.

Then follows a long list of books, prescribed by the College Entrance Examinations Board, for *reading* and practice, from which ten books or poems may be selected. A further list is given for *study* and practice. For classes graduating in 1909 the books are: Shakespeare's "Macbeth"; Milton's "Lycidas," "Comus," "L'Allegro," and "Il Penseroso"; Burke's "Speech on Conciliation with America" or Washington's "Farewell Address," and Webster's "First Bunker Hill Oration"; Macaulay's "Life of Johnson" or Carlyle's "Essay on Burns."

In a further article I hope to describe the methods of teaching, with typical illustrations, and to give some estimates of its results.

Practical Guide to English Composition and Essay Writing. By W. S. Thomson. (Lewis Smith and Son.) 3s.—A book which has already passed through six editions has evidently some well-defined purpose. Mr. Thomson's purpose is to enable candidates to pass the English composition paper in Civil Service examinations, and his book seems well suited to that end.

SOME DUTIES AND DIFFICULTIES OF AN EDITOR OF TEXT-BOOKS.[1]

By CLOUDESLEY BRERETON, M.A.

II.

STUDENTS in semantics are well aware that many words pass in meaning from the abstract to the concrete and *vice versa*. The Latin word *civitas*, for instance, means the body of citizens (concrete), from thence passes to the signification of "citizenship" (abstract), and becomes concrete once more in the Italian *cività*, French *cité*, and the English city. But the process is really still more complicated. Not a few words in their oscillation to and fro between these two extremes often halt for a while at some intermediate point at which their meaning partakes of the nature of both abstract and concrete. Thus *la cité antique* is one of these hybrids, as may be seen when compared with the more concrete *cité Antoine* (Antoine's buildings). The English word "the City" (of London) shows still more detailed fluctuations. It may mean the bricks and mortar (concrete), the electoral district (less concrete), the electors, the Lord Mayor and the Common Council, and finally the business world.

Two things are at once clear from these comparisons. First, that there is an indefinite number of degrees of abstraction and concreteness; and, secondly, that the French equivalent by no means follows the same line of development as the English. Neither *cité* (buildings) nor city (*monde des affaires*) has any corresponding equivalent among the meanings of its respective double. Sometimes it is the French word that has the more extensive ramification of meanings; for instance, *coup, pays, directeur, mission, obligation, analyste, salaire* (earnings), *faction* (sentry), *parents, surnom* (adopted name), *sens* (direction), *mouvement* (excitement), *article* (chapter), *sage* (good), *sauvage* (shy), *interdit* (nonplussed), *défendre* (forbid), *troubler, verifier, contrôler*, &c. Sometimes it is the English word, as in country, viands, confidence, fashion. At times a kind of blight seems to strike a word in one language and give it a bad meaning, while its equivalent in the other remains unaffected. *Regrettable* does not necessarily mean "regrettable"; *clandestin* may mean merely "out-of-the-way"; *dégradation* may imply merely material decay; *vulgaire* does not always signify "vulgar"; on the other hand, *populaire* sometimes does; *altérer* as a rule indicates a change for the worse, and *qualifier* often means "to give a bad name to," while *glorieux* and *fameux* may be used as two-edged compliments. Most of these distinctions are, however, fairly clear. The difficulties naturally increase, the finer the shade of meaning becomes between the two doubles. The two following passages from Bourget will perhaps illustrate the point: "*D'autres traces de culture se découvraient dans le bas de ce vallon. . . . Hors de cette oasis, la solitude . . .*" Here

[1] The first article appeared in the April, 1908, number.

solitude is evidently more concrete than its English twin and means rather "wilderness." Again, take the following passage, where there seems to be a still finer distinction: "*De ce hameau, jusqu'au monastère une végétation descendait, merveilleuse.*" The word *végétation* seems to be a trifle more concrete, more definite than the corresponding English term. Perhaps the best English equivalent is "a mass of green" or "a mass of vegetation." In both these passages the general sense is perfectly clear to the careless reader; and one ventures to think that the ordinary editor who did not translate the book carefully in which these passages occur would pass over what appear to be two serious difficulties.

But not only do kindred words in the two languages develop dissimilar meanings, for which the respective equivalent is wanting, but when we come to compare the kindred members of the same family in the two languages we frequently find an actual gap in one or the other family group. Thus English has "ascension" and "ascend," but the latter word has no corresponding equivalent in French, and *monter* takes its place. *Expectation* is indeed found in French, but the English word "expect" has to pair off with *attendre*. Still more often it is the English substantive which fails, as might well be expected, as the word *par excellence* in French is the substantive, while in English it is the verb. Thus *écraser* has *écrasement* (cf. *écrasement d'un piéton*), for which we have no corresponding substantive.

Sometimes, again, difficulties are caused by the French having two words for the English one, some of which express merely a shade of difference, such as *défiance* and *méfiance*, while others are clearly distinguishable, as in *gourmet* and *gourmand*, *ingénieur* and *mécanicien*, *idiome* and *idiotisme*, *estomac* and *ventre*, *préparatifs* and *préparation*, *neuf* and *nouveau*, *vieux* and *ancien*, *romanesque* and *romantique*, *matinal* and *matineux*. English, however, does not always come off second best, as note the important difference between conscience and consciousness, liking and loving, for which the French have but a single word. Another great difficulty is when the French substantive expresses state and the English word expresses action, and *vice versa*, or, worse still, when the word partakes of the nature of both. Take, for instance, the word *perfection* in the following phrase: "*La science simplifiée par sa perfection.*" Here *perfection* obviously means "the way in which it had been worked out," and expresses action, whereas the English word always expresses state. *Entortillement* expresses both action and state. We have to use the words "twisting" and "twist," unless we use the plural "twistings." *Chargement* means either "load" or "loading." *Séduction* may imply either "seduction" or "seductive powers." *Imprudence* in French expresses not merely imprudent conduct, but an imprudent act.

Yet another difficulty arises in the case of words which, derived from the same Latin source and practically identical, have tracked off into totally different meanings, such as *défiance*, *appartement*, *gentilhomme*, *librairie*, *injurieux*, *sensible*, *gros*, *emphatique*, *joli*, *plaisant*, *propre*, *rester*, *assister*, *présentement* (immediately), &c. Again, a certain amount of difficulty is caused by some words being used metaphorically in one language and not in another. It is curious that while in French the number of abstract substantives formed from the verb is certainly greater than similarly formed substantives in English, there are certain common words in French, notably the parts of the body, *œil*, *oreille*, *langue*, *main*, *doigt*, *jambe*, *estomac*, &c., which are often used in proverbial expression for which the only English equivalent is some abstract word; cf. *Il paraît sous un jour favorable*, *cela crève les yeux*, *avoir l'oreille dure*, *n'y pas aller de la main morte*, &c. Some verbs, again, are only active in one language, while they are both active and neuter in the other. Compare the uses of buckle and *boucler* (the intransitive use in English can hardly be considered other than a technical term). *Reculer*, to recoil, has no corresponding transitive equivalent in English. The intransitive use of *donner* (to charge) has nothing to pair with in English; the active form of *se taire* is in a similar plight. Again, certain adjectives can only be used of persons in one language, whereas they can in the other be used of things; cf. *imperturbable*. On the other hand, *douloureux* strictly speaking, can only be used of things.

Again, certain adjectives can only be used as complements in one language, whereas they can be used indifferently in the other; cf. *prêt* (ready), *coi* (quiet), and for the reverse *comptable* (accountable). The use of adjectives as substantives to denote either persons or things is more extended in French; cf. *l'intime*, *le militaire*, *l'ignare*, *la mariée*, *un drôle*, *un petit brutal*, *le cher amoureux*, *un particulier*, and for things *l'arbitraire*, *son sérieux*, and *par impossible*. It not infrequently leads to difficulties; in translating, for instance, *le jeune blessé* we have to transpose as "the wounded youth."

But, of course, the crux of all cruces is the translation of words which are really the result of associations of ideas that do not correspond to any English combination. Some of these, like *respectable*, appear to have retained a strain of ancestral meaning that the English has lost, while the English equivalent has assumed a different complexion. Others, like *exaltation* or *amour-propre*, are concepts for which there is no single English equivalent; the former ranges in meaning from "enthusiasm" to "sublime self-devotion." It is a good instance of a word which only the context can decide. Another similar word is *ému*, which may mean either "moved," "excited," or "touched," and often all three. *Amour-propre* is a still more complex word, that oscillates between "self-interest" and "vanity."

It is no doubt partially due to those cross-bench words which have no exact synonym in

other languages that the translator has been so often curtly called a traitor. But is it not truer to say that the real translator does not transfer but reproduces? He is not so much a worker in some infinitely plastic material like wax who laboriously attempts a rule-of-thumb replica of the original. He is rather an artist who in a kindred but not identical medium recreates a likeness of his model. Naturally he is limited and at times hampered by the nature of the medium in which he works. But if he faithfully gives himself up to reproducing as closely as he can the thought and expression of the original, does not the work praise the master; or, if this be regarded as excessive, does not the translator, by his attempt at close but not slavish interpretation, arrive at a new mastery over the resources of his own language? This he will best attain, not by blindly copying the turns and twists of the foreign idiom so far as they are peculiar to the genius of the language as a whole, but by keeping the texture of his composition pre-eminently English, while boldly broidering upon it everything that seems to savour of the personal idiosyncrasies of the foreign writer.

SCHOOL ESSAYS AND INDIVIDUALITY.[1]

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II.

THE importance of developing the imagination in any scheme of intellectual training is now beginning to be recognised by educationists, and in a course of compositions an attempt should be made to utilise, in as great a variety of ways as possible, the imaginative power which young folk usually possess. Various methods, in addition to those already touched upon, will suggest themselves. The writing of an original fable is an easy form of the exercise; more difficult is it to describe an imaginary character. A class which had been reading Chaucer's "Prologue" was asked to write a description of "A Canterbury Pilgrim of the Twentieth Century," each boy choosing a character for himself. Once in a while the experiment has been tried of reading the first half of a simple magazine story to the class, and asking them to write their own versions of the remaining half. When they have done so, they are much interested to hear the original conclusion of the tale. A more difficult exercise is provided when the concluding half of a story is read, and they are asked to supply the first half. In writing original stories themselves, they need some guidance in the selection of subjects, so that the stories may be kept simple, and may deal with matters within their own experience.

Sometimes we have gone off into the realms of sheer fancy. "A Visit to Mathematic Land" recently produced some quaint accounts. Several of these were illustrated by thumb-nail sketches. The class criticised any inconsistencies or departures from the assumed conditions. After their own compositions had been discussed they listened with appreciation to the reading of Swift's account of Gulliver's visit to Laputa. Here are quotations from two of the compositions sent in, the first by a girl, the second by a boy:

(*a*) . . . The Town Hall clock struck twelve. As the last stroke died away, my "Godfrey and Siddons" began to grow. Larger and larger it became, until it almost filled the room. I got up to investigate this phenomenon, and discovered a tiny door just above the publisher's name on the back. This greatly excited my curiosity, and so, reflecting that nothing could be much worse than the original contents of the book, I "screwed my courage to the sticking place" and walked in. . . . A little figure hopped up to me, and creaked out, "I am the Lord Ruler and Set-Square, Introducer-in-General to the realm of Geometry. If you like, I will present you to some of our people." I bowed, and said I should be delighted. . . . Such was His Majesty Theorem IX. of the Book Second Dynasty. He was accompanied by his consort, Queen Too-ate; she was less in figure than her companion, but looked imposing enough, notwithstanding. . . . One of the most notable of the courtiers to whom I was presented was Pons Asinorum, Lord High Stumbling-stone to that part of the kingdom which is under the Viceroyalty of Euclid. . . .

(*b*) I had been puzzling over a hard deduction for over an hour, when, on lifting up my eyes, I saw a strange figure sitting on the table. It was the figure of a man, but this man was different from any I had seen before. He had many prominent angles about his body, his head was cylindrical, his body was like a large match-box, and his arms and legs were square prisms. "Well," said I in surprise, "who said there were no straight lines in nature?" My visitor turned round smartly and stood facing me, then said gravely, "Mr. Circle did; he was hanged for it last week." "Dear me, how very sad!" said I. "Who hanged him?" "Oh, the Court of Rational Quantities and Mathematical Accuracy did." "What!" I exclaimed, "we are not in Mathematic Land?" "That is precisely where we are," he replied; "the distance from here to Mathematic Land is exactly x miles; at the present moment x is equal to nothing, therefore your house is exactly no miles from Mathematic Land; *quod erat demonstrandum*!" "Will you please come outside, sir," said I, "and I will show you that we are in Scotland." I walked outside, followed by my visitor, but was amazed to see that in front of me there stretched a wide plain divided into large squares like a draught-board, and covered with huge pyramids like those of Egypt. Each square was divided into nine smaller squares, and in the middle division of each large square was a house; but in every fourth square in every fourth row there was a pyramid. . . . "I would like to show you the rest of the house," added my guide, "but I think you should go home at once, for the distance from here to your house is x miles, and x may become infinity at any moment." So home I went; but when I looked out of the window I saw that Mathematic Land was gone, no doubt to infinity. . . .

Occasionally a quotation from the poets is made to supply the text for an imaginative description. The following are extracts from two compositions

[1] The first article appeared in the April, 1908, number.

of this kind, written impromptu at an examination, on the theme—

A waste land, where no one comes,
Or hath come since the making of the world.

(*a*) There is a hopeless, sunless land beyond the confines of this happy earth, wherein no joy, no light, no fruit, but dark despairs, eternal glooms, and rank sterility are found. Blest man has never crushed the dark and meagre soil beneath his foot; the happy song of birds, the pleasant stir of life, is never heard; but as we listen, from afar we hear the doleful wailing of men's broken spirits, the low, sad moaning of deep despair, the shrill, sharp shriek of souls in sore torment; but voices of forgiveness, words of peace that might assuage deep griefs—none! There it lies, howled at by fierce tempests, scowled on by skies of steel. And thither comes the black and hungry raven, there on its rotting prey to gloat; the lonely eagle here finds joy; and here the man accurst, with hands dyed red with blood from murdered man, may flee, to swell the sounds of grief, or meditate in silence, amid the noises, of deeper judgment in an aftertime. . . .

(*b*) Far away, hid from the eyes of Time, between the shadows of the wings of Night there lies a land, its shores girt with the dead, black ooze of a lifeless ocean. The ragged locks of the storm-clouds lie low on the blasted heath, and the march of the clouds is dull and heavy, as if weighted with a world's misery. Bare to the lowering sky lie the weary miles of barren waste, that "drip with a silent horror of blood," and through the land there rolls a sullen stream between flat banks of hueless mud. Its dark-grey waters fret into foam with spite, and struggle and twist to reach the clumps of stunted alder that shiver by its banks. . . . Between the leaden sky and the weary land there moans a hollow wind, chill with the dews of death, and in the pauses of the wind there comes, borne faintly from far away, the wail of the lost who fly between the worlds. . . .

An optional exercise in verse is sometimes given, to direct attention to the mechanism of verse, to make felt the restraining limitations of this form of composition, to develop the power of selecting the fitting word, and through these to heighten the appreciation of the technical skill which good poetry displays. In work of this class care in gradation is needed. An easy piece for verse paraphrase forms a convenient start, and may be succeeded by verse translations, and these by exercises on some simple topic. A few quotations from specimens collected at various times will illustrate. Here are a few stanzas from a translation (by a Gaelic-speaking boy) of Horace, "Odes," III. 3:

Justice-lover, justice-giver,
And of purpose always strong—
Such a man will brave the rabble
And the passion of the throng,

Though they urge him to dishonour,
Though the tyrant threat'ning be,
Though the storms of Auster smite him—
Lord of Adriatic Sea.

Though the thunder-bolt from heaven
By the mighty Jove be hurled,
He stands steadfast, undismayed
Amidst the ruins of the world. . . .

While upon the graves of Priam
And of Paris cattle tread,
While the wild beasts yean their young
'Mid Trojan tombs, and no man dread,

Capitol, stand in gleaming glory,
Prosper, fiery Roman cause,
Till the Medes grace Roman triumphs,
And obey the Roman laws. . . .

The next is from a translation of Horace's "Fons Bandusiae":

Canicula, when it doth mount
Attendant in Orion's train,
Can never harm thee, little fount.

The oxen, wearied from the plough,
A soothing coolness here shall find;
The wandering herd shall drink enow.

Thou shalt be first 'mong famous wells
When I the lute tune to thy praise,
And sing an ode for thee which tells

Of hollow cliff with ilex green,
Whence laughing waters downward leap
And add their flow to thy pure sheen. . . .

Some specimens may be given of verse exercises on prescribed topics:

AUTUMN.

(*a*)

Orange and purple and golden brown,
These are the colours of Autumn's gown,
Roaming through shadowy forest and glade,
Auburn-haired, rowan-cheeked, hazel-eyed maid,
Breathing soft kisses laden with gold.

The pupils themselves criticised the last line, and there was much sharpening of wits in an effort to find an amended one to take its place. Individual tastes in the selection of the form of rhythm and of stanza are encouraged:

(*b*)

The silv'ry mists that lightly float
When Autumn dons her russet coat,
The mellow moon that slowly rides
Through fairy hosts of gleaming stars
When haze nor cloud their glory mars,
The whisp'ring fields, the mountain sides—
All thrill with vague expectant fear
As biting winter draweth near.

The next may be compared with the prose composition on the same theme already given:

THE ISLE OF YOUTH.

In Tir-nan-oig the winds are warm,
The skies are blue;
The heathery hillocks circling round
With laughter and with joy resound;
The sweet cuckoo
Among the trees her note doth sing, though hid her form.

In Tir-nan-oig are rosy cheeks
And sparkling eyes;
For hoary Time with crutch in hand
Shall ne'er the dwellers of that land
With age surprise. . . .

THE OLD YEAR.

(*a*)

Heavily let the solemn bell toll sadly,
Knelling forth in mournful accents slow
That the year we welcomed in so gladly
Draweth near his grave beneath the snow.

The soul is fleeting and the gaze is fixing,
The dew is freezing on the furrowed brow;
Old courtiers, Wind and Tempest, round are hov'ring;
Wild and free no longer, sadly moan they now.

Moan the trees and upward throw their skinny hands,
Sobs and sighs old Ocean, restless on the strand,
Darkened skies are weeping over saddened lands,
For their King lies vanquished, chilled by Death's grim hand.

(*b*)

The old year is waning; the solemn bells are tolling;
Many griefs it has known; the pleasures were but few.
It has seen many lives in the making and the marring;
But now it lies a-dying, and we welcome in the new.

The discussion of the compositions in class forms an essential feature. Here we begin to develop a critical standard. The best essays are read, and a word of praise is ready for the good things in them, whether of substance or of form. Portions from the essays of the weaker brethren are read too—no names mentioned this time—and the class point out defects and suggest amended forms of expression. The standard literature that is being read strengthens and heartens this striving after what is good in expression and in thought. Power of original thinking grows with use, the ear is slowly attuned to the music of the phrase, and the great lesson gradually learned that "one word is *not* as good as another."

CAMBRIDGE LOCAL EXAMINATIONS, 1907.

HINTS FOR TEACHERS FROM THE EXAMINERS' REPORTS.

THE fiftieth annual Report of the Syndicate of the University of Cambridge appointed to conduct the local examinations held in July and December last provides information likely to be of service to teachers in giving instruction in the chief subjects of the curriculum. Certain prevalent mistakes and common weaknesses noted by the examiners indicate special difficulties experienced by young pupils, and to these greater attention might be usefully directed in future lessons.

The order in which the subjects are dealt with below follows the original report.

COMPULSORY SECTION.—Referring to the papers of preliminary candidates in *Arithmetic*, the report points out that fractions and decimals were fairly done, but some candidates did not understand how to deal with negative fractions or the inversion of fractions in the division of one fraction by another. There was an imperfect knowledge of measures of capacity. In December in their answers to a question involving French money, many candidates treated francs as if they were English pounds containing twenty centimes instead of shillings; and several even of the successful candidates employed fractions through a failure to appreciate the advantage of the decimal system. The most notable errors among junior candidates arose in connection with decimal measures, profit and loss, percentage, and extraction of square root. The word *ratio* was very often misunderstood. There was much confusion in the papers of senior candidates in the use of square and cubic measures, especially in the metric system. Few candidates understood how to apply correctly the methods of approximate calculation to a required degree of accuracy; many appeared to have been taught that it was sufficient to go to two places of decimals throughout their work, without any reference to the use to be made of the figures so obtained. Many candidates also used decimals for work in which their use was very undesirable, and some neglected to use them when they could have done so with advantage. Many candidates in reducing miles to feet made use unnecessarily of the inconvenient measure of poles.

RELIGIOUS KNOWLEDGE.—Many senior candidates who offered Genesis and Exodus gave a biographical outline instead of the description of a character, some confined themselves to abstract generalities, others again were too sweeping and unmeasured in their estimates. In the answers to the question on contexts, utterances were often assigned to the wrong speakers, and historical facts were narrated in a wrong chronological order.

The lessons taught by the Sermon on the Mount and the leading ideas suggested by parables were seldom stated thoughtfully by the senior candidates who took up the Gospel. Old Testament prophecies were not always accurately quoted. Very little knowledge was shown of the Revised Version. The stages in our Lord's Trial were not very clearly distinguished, and the significance of His actions or words with reference to the Jewish Law was hardly made explicit.

ENGLISH SUBJECTS.—In the case of *English Grammar* the infinitive mood seemed unfamiliar to preliminary candidates, and many of these candidates failed to analyse correctly an interrogative sentence. In the parsing of the juniors, "lay" was very seldom treated fully and accurately. Many of the candidates did not grasp the different functions of adjectives and adverbs; others confused adverbs and conjunctions. Definitions too often contained mistakes showing that memory had been used without understanding, while the examples given in illustration frequently contradicted the definition. The analysis was done for the most part intelligently, but in many cases, while the details of each clause were correct, the relation of the clauses to the whole was faulty.

The use of inverted commas seems not yet to be understood by the majority of the preliminary candidates who took up *English Composition*. The habit of converting all speeches into oratio

obliqua should be discouraged, as it makes the narrative lifeless and leads to the ambiguous use of personal pronouns. This last-named fault specially needs to be guarded against. Spelling was only moderately good, and occasioned more failures than did faults of composition. Comparatively few juniors understood the correct form of a letter in the third person: on the other hand, most of these candidates correctly turned the piece of reported speech into the direct form. The chief defect in the case of senior candidates was lack of consecutive thought and arrangement, due apparently to inability to think out any series of propositions in connection with the selected subject. In July few seniors framed sentences so as to show the precise meaning of certain given words. Both in July and in December the emendation of faulty sentences was rarely very successful, glaring solecisms being ignored in most cases, and explanations, when attempted, often entirely missing the point.

In their answers on Shakespeare's *As You Like It*, the passages set for paraphrase were completely misunderstood by many junior candidates. Their answers to a question on metre were unsatisfactory. Some of the candidates, when required to give two of the songs in their own words, used the words of the play. In the senior papers on the same subject a desire was evident to introduce as much matter as possible from "notes," whether appositely or not. Candidates showed but little power of selecting apt points and passages in illustration of descriptive answers. Many irrelevant quotations were made of long passages of the text, and in smaller quotations the author's words were often reproduced in such a way as to convey a wrong and even an opposite meaning. The paraphrasing was very weak. "*Simple* prose" was rare, and the passage was frequently expanded out of all reason, besides being generally badly expressed.

A question on the distinction between wit and humour in the *English Literature* paper for seniors was seldom well handled; and the definitions of "epic," "idyll," and other forms of poetry were generally imperfectly understood and rather poorly expressed.

Speaking of the *English History* answers of senior candidates, the examiners say that, as usual, the questions best done were generally those demanding mere knowledge of incidents, especially of a picturesque or personal nature. Some candidates were very parsimonious of dates. The answers to the question on the meaning of the terms Protestant, Puritan, &c., often showed much laxity of thought. Few were able to give a clear account of the chief tenets of the two great parties in Queen Anne's reign. In the question asking for a comparison of the younger William Pitt with Sir Robert Walpole "as a Peace Minister," the latter phrase was often taken as merely equivalent to "a lover of Peace." The abolition of the slave-trade and the abolition of slavery within the British Empire were frequently confused. The answers to the question on the more immediate social and economic results of the construction of railways were very superficial: hardly anything was known of the "Railway Mania."

In the case of *Geography*, definitions of geographical terms given by preliminary candidates were frequently inaccurate, especially *meridian*, *latitude*, *equinox*, *arctic circle*. Much vagueness existed with respect to the coalfields and industrial centres of Scotland. A want of precision was noticeable in naming the origin of natural products, such as cotton. Much of the information given by juniors about the commercial geography of the British Isles was obsolete. The position of the English Lakes was seldom accurately given. A district other than that indicated in the question paper was often described, usually owing to the confusion of *East* and *West*. Many candidates seemed to be ignorant of the meaning of *physical features*. The descriptions of the seniors of the physical features of countries and coasts were generally poor; not uncommonly mere lists of rivers, mountains, &c., were given instead of descriptions. In the majority of cases little or no attention had been paid to the relation between the physical features of a country and its commercial and political geography; this was especially evident in the answers to the questions on the geographical conditions which have determined the sites of towns, and on the routes of the main railways in Scotland. Owing to insufficient attention to the questions many candidates wrote *general* accounts instead of confining themselves to the *special* aspects of the subjects on which they were asked to write.

Classical Section.—In the *Latin Grammar* of junior candidates the parsing was in the majority of the papers poorly done, as usual: constructions were rarely given, and many candidates used grammatical terms apparently without any understanding of their meaning. There was, in fact, an extensive ignorance of what is meant by parsing. The isolated sentences were in many cases satisfactorily translated into Latin by junior candidates who failed entirely in the continuous *composition*. This failure seemed to be due to a want of practice and the absence of knowledge of the necessity and force of connecting particles in Latin. The accidence of the seniors was disappointing except in the comparison of adjectives and adverbs; and many candidates were again careless in reading the questions. The simple sentences for translation into Latin were well rendered by very few; the explanation of points of grammar in short Latin sentences was sensibly given; but nearly every candidate failed to recognise a partitive genitive. In July the composition was mostly worthless.

Modern Languages Section.—The knowledge of *French* accidence displayed by the juniors was on the whole fair, but the answers from some centres showed considerable weakness, for which the lack of a systematic study of grammar was perhaps responsible. Mistakes in spelling, which seemed to be due to insufficient written work, were frequent. The unprepared passage of

ordinary difficulty was well translated by a small percentage of the candidates. Want of thought and of a knowledge of grammatical forms, rather than want of vocabulary, was the source of the weakness of a large number of the translations. In the short sentences for translation into French the idiomatic points involved were in very many cases not known, and the spelling of the words was frequently incorrect. A large number of composition exercises were marred by ignorance of accidence and syntax. The free composition showed an increased facility in writing French, but many candidates trusted to their memory of phrases learnt by ear in the class-room, which they were unable to spell correctly.

The chief faults in the passages from the set books were a tendency to loose paraphrase and the retention of the French idiom in translating.

The question on the past participles showed that even the simplest rules were not well known by senior candidates. Their easy unprepared translation was on the whole well done. In many cases, however, an obviously wrong rendering was given, making nonsense of the text. In the unprepared translation of ordinary difficulty, the majority of these candidates did not grasp the full meaning of the passage set and gave a bald rendering. Though a fair number did well in the translation from English into French, many showed an unsatisfactory knowledge of grammar.

MATHEMATICAL SECTION.—In the practical work in *Geometry* the following points were noteworthy in the answers of preliminary candidates: (i) Few answers were received to questions on the solid content and superficial area of rectangular solids. Very few candidates seemed able to distinguish between bulk and surface. (ii) Much of the work sent up in pencil was very indistinct, a great deal of it being hardly, if at all, intelligible. Pencil should be used for figure drawing only. (iii) The candidates measured lines in inches or centimetres at will, paying no heed to the unit chosen by the examiner. Sometimes a candidate would use different units for different lines in the same question. (iv) Very few of the candidates could use a protractor properly either to measure an angle or to draw one.

Many junior candidates did not know what is meant by "the perpendicular distance of a point from a line," "a point being equidistant from two lines," "an escribed circle." The theoretical questions were fairly well answered. Many candidates, however, assumed the congruence of two triangles having two sides and an angle opposite to one of them equal respectively to two sides and an angle of the other.

The following points of detail are noted concerning the senior answers in geometry: proofs depending on "folding over," or on considering the tangent to a circle as the limiting case of a line cutting it, did not appear to be grasped except by the abler students; many candidates did not realise that two triangles are not necessarily congruent because two sides and an angle opposite one of them are equal in the two triangles; the mistake of taking the area of a parallelogram as the product of the sides was rather common; riders in which any construction was necessary were rarely done; questions on three-dimensional geometry were attempted by extremely few candidates.

At several centres junior candidates offering *Algebra* had been trained, or had trained themsevles, to write out "likely" pieces of bookwork; this was specially noticeable in the case of permutations, where a certain well-known paragraph was repeated, practically verbatim, by candidates who were quite unable to work correctly the easy questions in the first part of the paper. The questions on the Binomial Theorem were not attempted by two per cent. of the candidates altogether in the two examinations. The elementary pieces of bookwork in logarithms were very seldom successfully written out; but the simple numerical examples, when tried, were generally well done. Attention should be directed to the practice, exceptionally prevalent, of writing down answers instead of "finding" them; for example, in a very large majority of cases the question "Find the sum of an A.P...." was supposed to be answered by merely writing down (often incorrectly) the formula, and subjecting it to various manipulations, the meaning or object of which it was impossible to discover. The examiners are of opinion that in many schools the mathematical teaching needs drastic change.

The questions on graphs were attempted by more senior candidates than usual, but in many cases the drawing was careless and the figures showed broken lines instead of continuous curves. The questions on permutations and combinations were not well done, and there were very few attempts to answer the questions on the more advanced parts of the subject. It was evident that a number of candidates had been pushed on as far as the Binomial Theorem without any real knowledge of the elements of the subject.

NATURAL SCIENCES SECTION.—In both examinations in *Experimental Science* the answers of juniors to the questions on the physics part of the schedule were less satisfactory than those to the questions on chemistry. In fact, many candidates seemed to have hardly any clear ideas at all on the elements of hydrostatics and heat, or the laws of gases. The answers to the questions on chemistry generally showed an intelligent acquaintance with the methods of experimenting with common substances and with the apparatus used in connection with the collection of gases; but there was much confusion in the accounts which were given of the properties of common substances. In the practical examinations the experiments on heat and the qualitative experiments in chemistry were not done well.

In their answers on *Heat*, to obtain the lower fixed point for a thermometer, some junior candidates proposed to use freezing-mixtures; and for measuring the coefficient of expansion of a rod, methods of heating were often given which made

it impossible for the temperature of the rod to be determined. The statements about the mechanical equivalent of heat were frequently unsatisfactory.

It was very noticeable in the papers of preliminary candidates in *Botany* that frequently the great majority of the candidates at a given centre shared the same fate, nearly all passing, or nearly all failing. This suggests that the results were largely determined by good or bad teaching. It is most desirable that the teaching should be made more practical, and that the elementary principles of the physiology of plants should be more insisted on. The answers of many of the junior candidates, too, indicated that the teaching of elementary botany had not as a rule been carried out on sufficiently practical lines, observation and experiment having too often been replaced by lectures and text-book reading. The senior answers, again, from the majority of the centres taking botany showed that far too little attention had been given to practical work. As elementary botany owes its educational value chiefly to the fact that it offers unusual facilities for experiment and observation, this is much to be regretted. There should be no more difficulty in providing the apparatus necessary for many physiological experiments, or the material for the study of external morphology, than in providing flowering specimens for description.

The teaching of *Physical Geography* seemed, the examiners remark, to have departed largely from the spirit and details of the schedule, those parts in which independent observation is possible having been neglected in favour of those in which it is not. Rain was commonly said to be due to wind blowing against mountains, and few, if any, of the junior candidates had been taught to read the barometer. More than half the senior papers were very poor and showed a very imperfect knowledge of the subject. Many of the candidates, especially amongst the girls, seemed to be unacquainted with the simplest physical laws, and were in consequence quite unable to give a clear explanation of the formation of fog or cloud. On the whole the boys appeared to understand the use of maps and plans fairly well, but comparatively few of the girls attempted the questions dealing with these subjects. Some candidates, although able to draw a fair sketch-map of their own district, were apparently unacquainted with the position of the cardinal points.

Historical German Grammar. Vol. i. Phonology, Word-formation, and Accidence. By J. Wright. xv+314 pp. (Oxford University Press.) 6s. net.—To students of German philology this book can be warmly recommended, and it should find a place in teachers' reference libraries. Prof. Wright has devoted very great labour to this work, and as a result he is justified in claiming that "it is the most complete treatise on historical German grammar which has hitherto appeared in the English language." When the grammar is completed, by the publication of the second volume (on Syntax), which Prof. Fiedler has undertaken, we shall have a piece of work of which we may well be proud.

THE DAWN OF THE CONSTITUTION.[1]

DR. RAMSAY has occupied himself for many years studying the documents of mediæval English history and giving us at intervals the results. We have thus had already "The Foundations of England," "The Angevin Empire," and "Lancaster and York." Now, under the title "The Dawn of the Constitution" he gives us the reigns of Henry III. and Edward I. It contains everything that can be drawn from authentic sources except some details of taxation, and serves therefore as a complete work of reference for the period. There are a few Scotticisms which sound strange to an English reader and a very few slips, chief among which is the reference of the lines "Ruin seize thee, ruthless king," &c., to Gray's "Elegy" (p. 347), but these do not detract from the solid value of the book.

Among the points that we have noted as new information, or at least the emphasising of generally neglected matter, we have chosen the following. The fleet defeated in 1217 was sent by Blanche as reinforcements to her husband, Louis of France (p. 12). The first "Plantagenet" king was Edward IV. (p. 21 n.). The title "Mad" for the Parliament of 1258 is late, and does not represent contemporary opinion (p. 168 n.). The capture of Wallace was not owing to the treachery of Menteith, but to an act of revenge by a subordinate (p. 497). The motto "Pactum Serva" on Edward I.'s tomb is of the sixteenth century, as shown by Dean Stanley (p. 522 n.). "Circumspecte Agatis" is explained clearly (p. 357). Londoners and London visitors will learn the origin of the names "Vauxhall" (p. 37) and "Chancery Lane" (p. 105).

Edward I.'s character loses in the hands of Dr. Ramsay. We should be tempted to attribute this to Scottish prejudice, did he not in detail give us, not as a matter of polemics, but just as a matter of truthful chronicle, grounds for his statement (p. 522) that "the motto inscribed on his tomb was not one that could honestly be claimed on his behalf . . . he could disown the most solemn engagements, and if that did not suffice, he could stoop to falsification of documents . . . bent on having his own way, yet anxious at the same time to find justification for all that he does." This is going further than Dr. Stubbs was willing to allow in depreciation of his hero. Simon de Montfort does not fare much better. "His administration of Guienne stood clearly condemned by its results" (p. 135). "Simon's stiffness in August, 1263, cannot well be justified. Henry's government, no doubt, had been wilful and irritating to the magnates, but it had been too weak to be oppressive, and in fact the Barons had pretty well squared accounts with the King by their persistent refusal of supplies" (p. 207).

There is evidently a certain bias against the Papacy, and, perhaps, too much patriotism in the book for an impartial history. Yet Dr. Ramsay

[1] "The Dawn of the Constitution." By J. H. Ramsay. xxxii+591 pp. (Swan Sonnenschein.) 12s.

makes it clear that the Popes were but using their legal claims as suzerain lords, and that even Bishop Grosseteste could not legally refuse Papal demands. When Henry appealed to Grosseteste in 1246 against the demand for a twentieth for a crusade, the bishop replied, "He had no option in the matter, but even if he had, it would indeed be strange if he and his episcopal brethren were not ready to do that and much more for their Spiritual Father in his tribulation and exile" (p. 115). Thus Dr. Ramsay does but emphasise what we have already learned from Dr. Maitland's "Canon Law in England" and Dr. Gasquet's "Henry III. and the Church."

Finally, the perusal of this book will help the ordinary student to put in its right setting the progress of events which gives its title to the work. He will learn how gradual was the "dawn" of the parliamentary "constitution," and how its growth was what we might be tempted to call the chance result of circumstances. Out of the wars with France and Scotland arose the need for money on the part of the kings. Out of that need arose quarrels between king and nobles. Hence came the summons for parliaments. Hence the addition to the nobility in parliaments of those representatives of counties and towns which *afterwards* won such power.

SCHOOL EXCURSIONS AND VACATION SCHOOLS.[1]

FOR this report our thanks are due to Mr. J. E. G. de Montmorency. His work has been very carefully done. He refers to original papers in English, French, German, Dutch and Latin. His object is to describe typical experiments, and to suggest that such experiments should be multiplied under the guidance which this report affords. The report is thoroughly up-to-date, describing the Russell Road Pupil Teachers' Centre in 1905, the Roan School for Girls in 1907, and St. Giles's Voluntary School, Reading, in 1907; indeed, most of the experience quoted is twentieth-century. But for mental balance an historical note reminds us of the wandering scholars of earlier ages, and quotes Rabelais, Erasmus and Comenius as exponents of nature-study.

The report is full of suggestions, but experiences seem conflicting until we consider how circumstances of age, locality, finance and *personnel* differ from school to school.

The leading aims of the vacation schools are health and instructive recreation. At Mrs. Humphry Ward's school the average attendance was 80 per cent., only one child was withdrawn from religious exercises, and no child was expelled for unruly behaviour. Manchester, Epping Forest, Leeds, Walworth and Hereford are also described. Success is associated with the number and skill of the teachers and with small classes. Singing, musical drill, dancing, brush-work and clay-modelling are among subjects taught. At Hereford the assistants included keen headmasters doing paid holiday work. At Walworth the teachers were unpaid volunteers. The L.C.C. insists that its permanent staff must take proper holidays. There is an opportunity for co-operation between voluntary associations and education authorities in arranging for boarding town children in the country with some vacation schooling.

The stories of the school journey in Germany, its original home, move our amazement at times with reports of strict marching order, obedient dulness and talk only on prescribed subjects. But military discipline and scholastic pedantry seem generally tempered by the humanity of the masters. There are numerous recent English experiments in school excursions, all encouraging. Nature-study has been the dominant motive. Programmes, expenses and menus are quoted, and problems of hygiene are discussed.

We cordially commend the volume to the consideration and encouragement of the profession, believing that what pioneer enthusiasts have achieved on a small scale can probably be copied widely and successfully, although perhaps not indefinitely multiplied by organisation.

[1] "Board of Education. Special Reports on Educational Subjects Vol. xxi., School Excursions and Vacation Schools." [Cd. 3866.] (Wyman.) 5½*d.*

THE TEACHING OF COOKERY.[1]

THE more recent teaching of cookery aims at raising the subject to a scientific standard, making it no longer a "base mechanic art," but a system both domestic and educational. In some of our London schools now the student works out in the laboratory the scientific reasons for the homely processes carried on in the kitchen. That is a working ideal which finds much favour at present among the more progressive American educationists, and the book of Miss Williams and and Miss Fisher has been prepared in reponse to the wishes of teachers of cookery in the public schools of New York City. American text-books on domestic crafts, unlike our similar literature, are few. There cannot be too many like this admirable handbook. It makes a timely appearance to meet a need long felt—here as well as in the States—especially by the teachers in secondary schools.

In secondary schools the girls learning cookery are as a rule older, and have a wider education and more time at their disposal, than their sisters in the elementary schools. To them the theory of the subject in its new and more rational treatment lies fascinatingly open, although, if lessons are to be fruitful, the knowledge of why some processes and some foods are preferable to others should not be entirely withheld from the less favoured children. Many experiments by which the pupils can find out for themselves the

[1] "Elements of the Theory and Practice of Cookery." By Mary E. Williams and Katherine Rolston Fisher. 346 pp. (Macmillan.) 4*s.* 6*d.*
"Instruction in Cookery." By A. P. Thompson. 116 pp. (Methuen.) 2*s.* 6*d.*

composition of milk, eggs, meat, potatoes, in fact, most of the common everyday elements of dietary, are suggested by these well-informed authors.

Once the scholars get hold of this idea, there comes to them the charm of self-acquired understanding. The best methods of cooking and the best materials to use are, as it were, discovered by each learner for herself. Experiments and corresponding recipes are set forth in a new and useful sequence, and from this point of view, at once dignified and useful, the book is distinctly helpful. A chapter is devoted to cleaning, and here again are suggestions for the discovery of the all-important "why." Further, the student is taken beyond the preparation of food to the elementary principles of digestion, and once again cause and effect are associated. A teacher with some gift of imagination would find, starting with the hints given by Miss Williams and Miss Foster, that her lesson would soon become an entertainment to children, who are caught by anything engaging both their hands and their heads. Thus are cookery, chemistry, and physiology associated by these accomplished ladies. Those who have taught in this way can testify to the altered attitude of the girls to one of respect for a subject not long ago regarded as the abiding refuge of the "duffer."

Miss Thompson's book is written for a different class of teaching from that contemplated by our American authors. It contains many useful hints on the management of practical classes in the poorer districts, the purchase of stores, and the keeping of registers. The entering of hours as decimals instead of as fractions is an excellent suggestion. The book contains many good recipes, along with information that should be at hand for every teacher. The author is a London County Council instructress, and is on familiar ground when she gives these with generous amplitude. But it is just here that we should stimulate curiosity and lead on to the search after causes. We should have liked to see an appeal made to the intelligence and the fancy of the children rather than to their already burdened memories. The more science comes in homely garb the brighter will be the school life and the world for the children of our elementary schools, whose surroundings are none too inspiring. But on its own level—which is that too widely accepted—the little handbook may be relied upon for useful and accurate information.

The C.H.A. Geographical Exercise Book. (E. J. Arnold.) 1s.—This is a note-book which comprises, in addition to the ordinary ruled pages for transcribing notes or working exercises, extra leaves of drawing paper for maps, and of squared paper for diagrams. A set of gummed tabs, or guards, is also inserted for mounting maps. The idea is good, but we do not like the relegation of the maps and diagrams to the end of the book. If there is one thing the practical teacher insists upon, it is to have his boy's map or diagram on the page *opposite to* the notes which it illustrates.

THE TEACHING OF ENGLISH COMPOSITION TO UPPER FORMS.[1]

By Katharine R. Heath,
Headmistress of Mortimer House School, Clifton.

In offering some account of methods and theories as to the teaching of English composition, I must premise that I intend to leave the question of a classical education and its effect on the literary faculties of boys and girls entirely on one side. I do not think it materially affects the main contention which I wish to uphold, namely, that English composition can be taught and should be taught, and that the art of writing good English is attainable by all average pupils, whether their general mental training depends chiefly on classics, or science, or English, or anything else. I often meet teachers who say that English composition cannot be taught, and that style is an instinct, born in some and not to be attained to by others, let them strive and agonise as they will. But it is true of every art the world has seen practised that there are a few heaven-born geniuses who will do, without teaching, more than the average man with the best training in the world. But, even in the case of the born genius, he has to learn or be taught the technicalities of his particular mode of expression. If he has to pick them up for himself he is bound to waste time, to make mistakes, to feel tentatively after more and more satisfactory methods or mediums, before his genius can express itself, unhampered, untrammelled by uncertainty or ignorance of the mere utilitarian details belonging to the craft of his work. Even a Raphael could not have accomplished, in the limits of an ordinary life, still less in his brief years, the many masterpieces he left to the world, but for his stern and prolonged training in the *bottega* of a Perugino, sordid in aims, inferior in genius, but an excellent craftsman, and possessed of all the technicalities of painting at which the Renaissance age in Italy had arrived. And much more does the ordinary average aspirant to an art that is a necessity in the life of culture need to learn, as systematically as may be, what I may call the "craft stage" of writing.

Now is grammar enough, even if well taught, to supply the pupil with power over his own language? I own I can imagine grammar lessons so "advanced" as to touch a good many of those exercises which I am going to detail as composition exercises, but there is no hard and fast line between the two, and I have not found in several schools with which I am acquainted, where there is no hour for composition, any marked difference in the grammar lessons, while it is very usual to drop grammar in the highest forms. It is often urged, and quite justly, that facility in writing English depends largely on other subjects taught in a school. In literature and in reading lessons a good deal of composition is required, though perhaps more often oral than written composition, but home work in these, as in history and even geography, practises children in writing their thoughts. Yet, except in the rare case of a teacher with a peculiar turn for form and style in writing, composition faults pass uncorrected—I do not mean grammar faults; doubtless every teacher notes them. I mean that, so long as the information required is there, it matters comparatively little whether there is baldness or abruptness of statement, or whether wordiness or want of precision in choice of words, or whether sentences lack unity, or whether paragraphs show construction or not. It is, in fact, a serious question

[1] A paper read at the Bristol Branch of the English Association.

in my mind whether the very common habit of requiring everything to be written is not encouraging bad habits and making it more difficult to cure faults in style and mode of expression, since, if there is only one careful composition written in the week and five or six careless ones, in as many different subjects, the habits are not likely to tend towards improvement.

I confine myself, therefore, to some account of actual composition lessons given in upper forms, where the pupils vary in age from fifteen to nineteen. One expects the boy or girl of fifteen who has had any kind of passable education to be able to write in grammar, and exercises on grammatical difficulties are not needful. But one often finds great poverty of vocabulary and little sense of fitness in the choice of words. On the other hand, structure is generally quite unconscious, if there is any at all. A girl once naïvely remarked, "Do you mean to say that a writer thinks about what his paragraph is about? I thought they just wrote straight on, and began on a new line when they felt inclined to!" I expect there are many older people who think much the same, if they have ever given the matter a thought at all. Lastly, there is the direction of the ever developing idea, the forming of taste and critical faculty, the stimulation of memory, imagination, and thought; so one's energies have to be directed in various directions at once, and I have found it best to alternate several classes of exercises, which I will enumerate and proceed to explain as briefly as may be:

1. Methods of increasing vocabulary and improving choice of words.

2. Exercises on the structure (*a*) of the sentence; (*b*) of the paragraph. (Punctuation is very closely allied, and may well be worked at concurrently.)

3. Thought, imagination, and memory exercises. (Reproductions and amplifications included.)

4. Structure of an essay. Schemes, or skeletons, embodying the statements or topics, which are to be amplified into paragraphs.

5. Verse and scansion exercises.

6. Methods of improving style.

It is quite impossible to detail all the exercises available in pursuit of the aim indicated in each of these six classes. I imagine that every intelligent teacher will invent a large number and continually vary the work of his class, while keeping a definite aim in every exercise given. I will choose such exercises from my own practice which seem to have produced satisfactory results and to have aroused interest.

1. *Vocabulary Exercises.*—I made a calculation some years ago of the average number of words used by pupils in my form. It happened, I must say, that there was no one at all literary or above the average at the time. I could not make it up to 400! Marsh estimates that the English language possesses 100,000 words, that the average writer or public speaker uses probably about 10,000, that Shakespeare used 15,000, Milton only 8,000, that the "ordinary person of fair intelligence" does not use above 3,000 or 4,000! But it was, with the said form, very decided proof that some attempt must be made to enlarge their store of words. One way is to pass round books by classical authors; if the same book, different pages should be taken by each pupil, but different books will do equally well. Tell them to read for five minutes, and to put down in one column words they understand, but do not habitually use; in another column, words that are not familiar to them, or which they cannot explain. It is easy to get from each a dozen or so of words. One rules out obsolete words, words belonging to very technical or scientific nomenclature, and the remainder is usually quite enough to supply some class work in the way of forming sentences using them correctly, and for the home work. The latter may consist either of finding the words used by other writers, and learning and writing out the sentences, or the pupils may be told to write original sentences and to use a given selection of the words found in class in a short story or in numberless other ways. Another object with regard to vocabulary is to train in the choice of words. Here any big dictionary (such as the "Century Dictionary" or the "Imperial Dictionary") which gives, after the explanations of each word, a string of so-called synonyms, can be made of great use. A good and interesting lesson may be given showing how these so-called synonyms are generally, in fact, not strictly synonyms, but that one word is correct in one place, one in another. Sentences may be dictated, or better still cyclostyled, ready beforehand, leaving blanks for the insertion of the best word to be used in the particular connection. The fine shades of meaning between such words as occasion and opportunity, between esteem, regard, respect, and reverence, &c., prove, as a rule, very interesting to pupils. Stress is, of course, laid in vocabulary exercises on the superiority of Saxon words to Latin, and a passage of Johnson to render into simple Saxon English is an allowable paraphrase, though, as a rule, I consider paraphrasing a vicious exercise. The only wholly unobjectionable paraphrase is for the teacher to give a faulty version of some passage from a good author, to be turned back again into the best English the pupils can manage. The comparison of the versions with the original makes a profitable and amusing lesson.

2. But I must pass on to lessons on the *structure of sentence and paragraph.* In each the main points to which to attend are unity, coherence, and emphasis. The number of pupils who fail to remember that a sentence must only contain one complete thought, or who, on the other hand, forget that a sentence must have a finite verb, is surprising. I will not dwell on sentence structure simple, as it ought to be perfected before pupils enter upper forms. I will only say a word on the importance of insisting on the topic of the paragraph being developed into a topic sentence, which crystallises, as it were, the thought of the writer. I have made it a rule that the topic sentence of each paragraph in all themes is to be underlined. It is then easy to see whether the paragraph has unity and coherence, while emphasis determines the best place for the topic sentence. The rest of the paragraph is subsidiary—it either introduces or amplifies or explains the topic sentence. Sometimes the latter comes best at the beginning, sometimes at the end. It will be found that good prose-writers have habits with regard to the position of their topic sentences. No better exercise can be given to pupils than to choose from any writers they like two or three paragraphs, and be prepared to say which and where is the topic sentence, and the connection of other parts of the paragraph with it, in leading up to it, enforcing it, or defending it from attack or misconstruction. All pupils choose different paragraphs, and the class can correct or criticise under the teacher's guidance. I may say in passing that the composition class must always employ all pupils. The criticism of individual essays can easily supply work for the class if the teacher has noted down, while correcting, a dozen or so of the most glaring faults. These can then be put up one by one on the board, and the pupils made to point out the corrections

themselves, or each to write a better sentence, supply a better word or a different or more correct fact. The matter of paragraph structure is, I feel sure, almost universally neglected, judging from the promiscuous paragraphing in newspapers, magazine articles (except in the best reviews), and modern novels. Often the new line is begun where there is no reason for it whatever, and the teacher of composition in upper forms should insist on the new paragraph being set in an inch or so from the margin and on the pupil having clear notions as to why he begins a new line. Other good exercises are: (*a*) To give a topic, and require a topic sentence and a short paragraph to amplify it. It is better still if the pupil writes a criticism of his or her own paragraph, stating the force and showing the necessity of each sentence. (*b*) To give three or four topic sentences to be amplified either on different aspects of one subject or on different, but preferably allied, subjects. These are easily drawn from the history or literature classes, or from any special lecture which they have lately heard.

3. Exercises to stimulate thought, imagination, and memory are far too numerous and varied for me to give more than the barest idea of the kind of thing I mean. But, say I am contemplating giving my girls an essay on some abstract subject, I should hunt up as much as possible what other people have written on the subject and give my pupils access to the books. In class, after they have presumably looked up the subject for a week, I should tell them to do a thought exercise for five minutes, and I should do it too. It means that they are to concentrate their minds on the subject and jot down faithfully, and with no attempt at order, all their thoughts. I insist on irrelevant thoughts being written too, and very funny the results are sometimes, the current of ideas being interrupted by such thoughts as: "I wonder what Mrs. H. is writing" or "that horrid child in the garden has bagged my diabolo"! Then at the end of five minutes the thought exercises are read aloud, and each girl may add to her store of ideas any other thoughts suggested by her companions. Lastly, I read mine, and we probably discuss the subject for the rest of the time. Finally, they write for next time either topic sentences or a scheme or skeleton, and may choose one or two topics to amplify into paragraphs. Occasionally a whole theme is required. An imagination exercise can give a description, very short and bald, of some occurrence, and require a story to be fashioned. An exercise demanding memory and imagination is when the teacher reads a poem (I need not say it must be well and dramatically read), and the story is to be told without any further reference to the original.

4. Schemes or skeletons of essays are usually developed from reading and thought exercises. The latter, always the first necessity with beginners in literary effort, consists of the first rough material as thrown out of the mind in a confused and heterogeneous mass. It has then to be arranged, and I require to see the arrangement written out before the essay. The arrangement differs according to the nature of the theme. A simple explanatory theme has one or two introductory topics, generally defining the scope of the essay or explaining the meaning of the title. The discussion, or the body of the essay, has an orderly arrangement of heads or topics, each corresponding to a paragraph in the essay. The conclusion has one or two concluding ideas, or, if the essay is didactic or persuasive, headings of a peroration more or less impassioned. An argumentative essay has a scheme of a different character, but the three main divisions, introduction, discussion, and conclusion, remain the same. The point about this insistence on structure is that pupils become accustomed from the first to feel that their writing cannot and must not be chaotic and formless, and they acquire the habit of not beginning to write an essay without considerable preliminary thought and arrangement of ideas in a more or less natural and orderly sequence. Further, correct paragraphing and the maintenance of unity, coherence, and emphasis are greatly helped by reference to the scheme. If this kind of advanced work is given and the time for preparation is limited, it is often better to require the scheme first, without the essay written in full. The scheme then can be corrected and criticised, and most probably improved by the teacher, and, if the essay is then written the following week, it is a better essay, and teaches the pupil more than a more careless scheme and essay written all at once would teach him. In the case of a scheme offered alone as an exercise, mere headings or topics should not be accepted, as they may be written without thought and before reading up or forming conclusions. They must be statements—the topic sentences I described before. For instance, if a scheme is to be written on such a subject as "The Quest of the Holy Grail," the introductory topics will be:

(*a*) Meaning of Quest.

(*b*) What was the Holy Grail?

And this is enough if the scheme is followed by the essay which gives the topic sentences in the course of the two paragraphs of the introduction. But if a scheme only is required, the introduction must be as follows:

(*a*) A quest in romance was any expedition or adventure undertaken by a knight with the specific purpose of discovery or search.

(*b*) The Holy Grail is variously explained by different authorities as the cup of the Last Supper, the dish which contained the Paschal Lamb, or the vessel in which Joseph of Arimathea caught the blood and water from our Saviour's side.

I will not weary you with further details of schemes, but I may mention that old pupils of literary tastes, several of whom are engaged in literary work, have told me that the best lesson they ever learnt was that of how to plan out or construct the scheme for an essay. If précis-writing is taught, and it is a very useful exercise, it will be readily seen that such a knowledge of synthesis as has been imparted will serve in the analysis of the work of others. I have myself often been amazed at the perfect structure attained to by some masters of style, and an interesting exercise for any teacher of composition would be to get out the scheme of, to anatomise, as it were, such an essay as Matthew Arnold's on Wordsworth, in the preface of the "Golden Treasury" selections of Wordsworth's poems. Ruskin's work shows fine form occasionally; so does Stevenson's; Macaulay is brilliant, but loose in construction; Carlyle lacks structure in the paragraph, but attains to plenty in some of his complete works.

5. Verse and scansion exercises do not need much explanation. They are very good practice, and improve the vocabulary and bring out anything of taste and fancy that may be lying dormant in individual pupils. I always marvel that, while boys are given many classical verse exercises, they are very little encouraged, and probably never forced, to write English verse, except occasionally in the case of translations from the classics. I am speaking from intimate knowledge of the work of only one public school, and I may be wrong as to others. Effort of the kind, even if unsuccessful from the poetical point

of view, must increase power over language, and such an exercise may advantageously be given two or three times in the year.

6. The exercises for giving insight into peculiarities of style are perhaps more connected with the study of literature than composition. I have incidentally mentioned one or two already. The careful examination of the structure of paragraphs or of essays has a marked effect in improving the critical faculty. The written criticism of his own paragraph, which is sometimes required, brings out for the pupil more clearly than a dozen criticisms by his teacher the actual value of each sentence he writes. I am in favour also of allowing pupils to do imitations of style from time to time. It requires minute observation of the means a writer uses to produce an effect. For instance, my form was once studying Defoe, and I was anxious to impress on them the fact that his realism depends entirely on a vivid visualising of the thing he is describing, and then considering no small circumstantial detail too trifling to be described minutely. We examined together an amusing account of a supernatural visitation (needless to say quite imaginary) which he prefixed to a work of his period called "Drelincourt on Death." It is probably familiar to everybody. I then set them as an exercise a rustic conversation in the same style. Several of them produced excellent imitations, and those who were less successful learnt a good deal about style from the criticism of their mistakes. Naturally, it is easiest to imitate the style of a writer with marked peculiarities than one less individual, and I feel the exercise should not be made at all common. It savours of irreverence. Also, perhaps, I am getting on to dangerous ground in the English Association, where we teachers are exhorted to "stand from between" the pupil and literature! Very few children see any but very obvious peculiarities of style without help, though, when pointed out, I do not find their pleasure or appreciation is lessened, but quite the reverse!

In conclusion, I would urge that the composition class has an important function both in raising the moral tone of the form and in consolidating the ideas imparted to them in other classes. With regard to the first point, essays or other exercises dealing with any particular ethical subject that may be advisable at the moment, with regard to the morals of the school, never fail to arouse keen interest. Suppose a sixth form to be weak and lacking in confidence for the headmaster, a theme on "Arnold's Relations with his VI. at Rugby," recommending a study of Arnold's life and of "Tom Brown's Schooldays," will hardly fail to be suggestive to the boy who has to produce it; or again in girls' schools, where it is difficult to produce the strong *esprit de corps* and obedience to tradition which the older public schools for boys generally inspire, an essay on "Loyalty" will often bring out points which I have seen produce a marked effect on the subsequent conduct of those who wrote it. It is unnecessary to dwell on the use of composition in clearing the ideas and consolidating the conclusions arrived at in history, literature, and other classes. It is a waste of energy and opportunity to set a string of essays for a whole term which have no relation at all to other work. The excuse urged is, no doubt, that the uncorrelated subjects will supply motive for reading outside the school curriculum, and so prove in a way widening to the interests, and be a relief and change of idea to the minds of pupils. There is something to be said for this view, especially when, as in the sixth of great public schools, the concentration of studies in the narrow groove of university scholarship requirements causes modern languages and often all English subjects to drop out, so that any correlation of composition would restrict the pupils to themes on classical subjects. But in other forms, and in girls' schools particularly, more thorough interest is aroused, and more is consequently taught, where composition requires further reading on subjects which are already being studied in school.

EARTHQUAKE STUDIES.[1]

By Prof. JOHN MILNE, F.R.S.

A DISCOVERY which during the last few years has done much to popularise seismology is the fact that a very large earthquake originating in any one part of the world may be recorded in any other portion of the same. This means that the opportunity for carrying on seismological research is not a monopoly enjoyed only by those who reside in earthquake countries. Although only a few persons in Great Britain have been privileged to feel one of its home-made tremors, every one of its inhabitants are very many times per year moved by earthquakes. Back and forth motion of the ground is performed too slowly for us to feel, while, if there is a movement like the swell upon an ocean, the undulations are too long and flat for us to see.

Waves start out from their epicentral area, which is a district that has been fissured and shattered by the formation or extension of large faults in all directions. Observation, however, shows that these waves are propagated farthest in one particular direction. For example, the chief movement following the San Francisco earthquake, which originated from fault lines running parallel to the coast of California, was much more marked in countries lying to the east or west of California than in countries lying towards the south. England and Japan obtained large records of the disturbance, while in Argentina the records were extremely small. In the case of the Jamaica earthquake, where the lines of origin ran east and west, the phenomenon was reversed. Toronto received a large quantity of motion, and England a very little. Another peculiarity of this phase of earthquake motion is that it may be propagated in one direction round the world to a greater distance than in an opposite direction. The suggestion is that the initial impulse was delivered in the direction towards which motion was propagated farthest. If for illustration we assume that the slip on a fault line has been downwards towards the east, then the motion would travel towards the east farther than it would towards the west. That which happens corresponds to what we see if we dip the blade of a spade in water and suddenly push the blade in some particular direction. The water waves thus created travel farthest in the direction of the impulse.

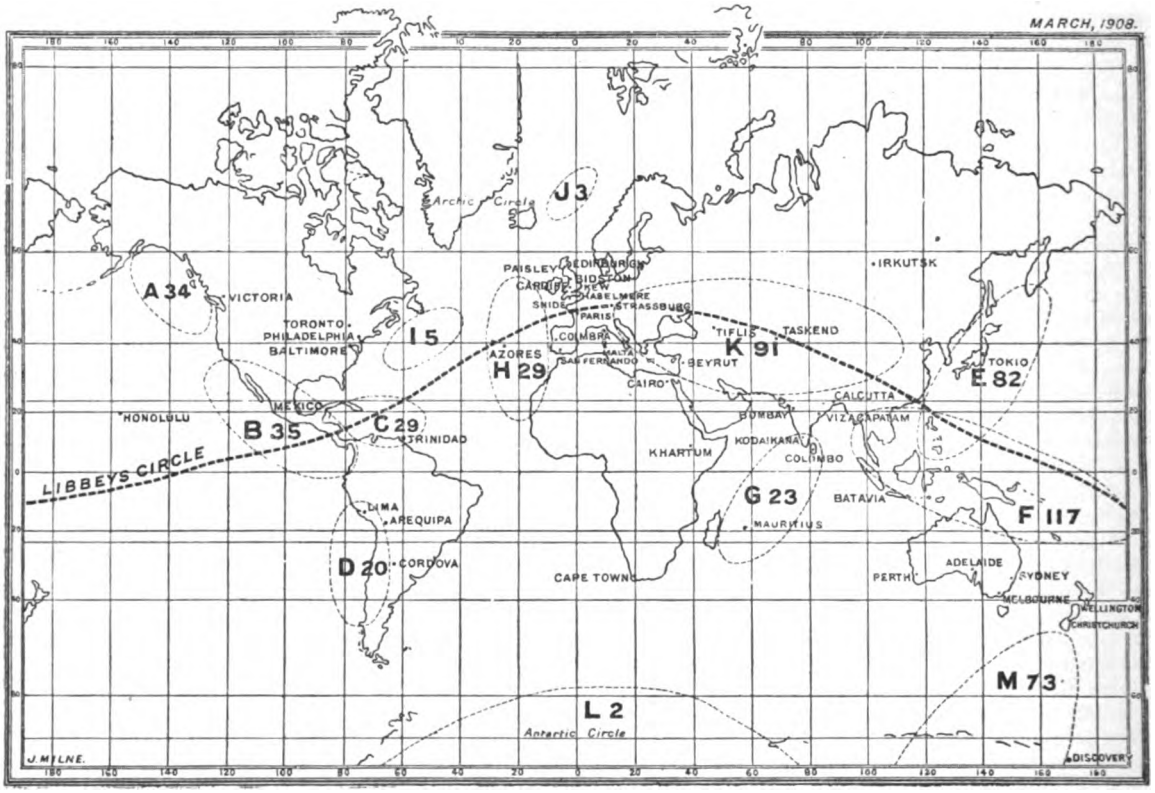
Another curious phenomenon connected with the large waves of certain earthquakes is that they can pass their equatorial or quadrantal region unobserved. They may be very marked for 1,000 miles round their origin, and recordable, but much reduced in size, about their antipodes, but not recordable in between. For example, an earthquake originating near New Zealand may be recorded in that country, but not in India, Egypt, West Asia, or east of Europe, but in Britain it may make itself evident by the thickening of a photographic trace. The

[1] Abridged from a discourse delivered at the Royal Institution on Friday, March 20th, 1908.

phenomenon may be compared to a water wave running down an expanding estuary. At the mouth of such an estuary it may have become so flat that it is no longer recognisable. Should it, however, run up a second estuary, we can imagine concentration taking place, so that near the top of the second estuary it would eventually become instrumentally recordable. In these antipodean survivors we see the final efforts of a dying earthquake. It is only occasionally that the precursors and the followers of these large waves have sufficient energy to reach their antipodes. They die *en route*. The former, notwithstanding their comparative feebleness, because they throw considerable light upon the internal constitution of our earth, are the most interesting feature in a seismogram. They are of two kinds, a first phase and a second phase. These are usually regarded as compressional and distortional a depth of twenty or thirty miles we enter a nucleus which is very rigid and fairly homogeneous. The second phase waves, up to a distance of 120° from their origin, have a speed of about 6 km. per sec.

When large earth waves sweep round the world, it is found that at particular stations magnetic and electrometer needles have been disturbed. Magnetometers, when installed at Toronto, do not appear to have responded to the slow undulations of the earth's surface, while the same instruments after being removed to Agincourt, only ten miles distant, are now affected. The inference from this and observations in other parts of the world is that the movements, rather than being caused mechanically, may be due to the disturbance of some adjacent magnetic magma.

Another series of investigations which may widen our



The districts A, B, C, &c., enclosed by dotted lines, are the chief centres of great earthquake disturbances. The figures in each oval show the number of world-shaking earthquakes which have originated in the various districts since 1899.

modes of wave propagation. The large waves are probably quasi-elastic gravitational waves, something like an ocean swell, which travel round the world with a constant velocity of about 3 km. per sec., causing continental surfaces to rise and fall like huge rafts upon a heaving ocean. The precursors behave quite differently. Phase 1. may commence with a velocity of 3 or 4 km. per sec., but as the length of the wave path increases this quickly rises to 10, and thence to a maximum of 12 km. per sec. These paths are assumed to be along chords, and so long as these chords do not lie at a depth greater than twenty or thirty miles, the speeds are such as we should expect to find in materials like those composing the outer surface of our earth. These waves, therefore, indicate a thickness for the earth's crust comparable to thicknesses which have been arrived at by other lines of argument. The rapid approximation to uniform speed suggests that below knowledge respecting conditions and operations beneath our feet are based upon the light effects which have been so frequently observed at the time of large earthquakes. Accounts of luminosity in the heavens and on hills as accompaniments to large earthquakes are common. At the time of the Valparaiso earthquake, August 17th, 1906, the attention of very many people was attracted to lights which appeared upon the hills. Captain Taylor, of the R.M.S. *Orissa*, compared these to chain lightning, which extended as far as the eye could reach. An acquaintance of mine, Mr. G. E. Naylor, of Valparaiso, told me that he saw the lights repeatedly, and they took place immediately before a shock, there being only a fraction of a second of time between the two. He described them as having a bluish tinge; to others, however, they appeared yellowish. An ordinary explanation for these appearances is that they are due to the rubbing together of rock

surfaces or the discharge of frictionally produced electricity. These observations suggest that with a megaseismic collapse, not only do we get mechanical disturbances which pass through and over the surface of the world, but that part of the initial energy at the origin is converted into some other form of energy which possibly may find a response at very distant places. This latter transmission would, however, take place with a velocity comparable with that of light. If anything of this sort has a real existence, seismologists may hope to record earthquakes at the moment they take place.

To determine whether earthquakes are increasing or decreasing, it is not only necessary to turn over the pages of many histories, but also to consult the geologist. Jules Verne might perhaps have dipped deeper into time than a geologist or physicist, and drawn pictures of the reactionary effect which might accompany the collision of one world with another, bombardments of great meteorites, a click that announced the birth of our moon, the sudden yieldings of a primitive crust covering an ocean of molten rock, and of many other things that float through the brains of those who entertain us with the results of their imaginations. The greater number of earthquakes, and certainly all that are large, originate from the formation or extension of faults. These operations have been most marked when secular movement amongst rock masses is in progress, as, for example, during the growth of mountains. Should this be in operation near large bodies of waters, volcanoes and earthquakes are found in the same region. If, therefore, we wish to know when earthquake frequency and intensity was at a maximum, we turn to those periods in geological history when mountain ranges were built, when volcanic activity was pronounced, and when great faults were made. The first of these periods would be coincident with the creation of the Urals, the Grampians, and other ancient mountain ranges. This took place in Palæozoic times. Another period of mountain formation was in early Tertiary times, when the Himalayas and the Alps were slowly, but intermittently, brought into existence. In both these periods volcanic activity was pronounced and beds of coal were formed. When the crust of the earth was crumbling, mountains grew spasmodically, faults gave rise to earthquakes, volcanic forces found their vents, and conditions existed which gave rise to the accumulation of materials to form coal.

In quite recent times many large faults have been created at the time of earthquakes. In 1891 the Mino-Owori fault was created in Central Japan, 10,000 people lost their lives, and 128,000 buildings were destroyed. On April 18th, 1906, San Francisco and other towns were ruined by movements along a fault which can be traced for a distance of 200 miles. One estimate suggests that it may be 400 miles in length. The largest fault which has been created in extremely recent geological times seems to be the Great Rift Valley of Central Africa. We are told that it commences in the south near Lake Nyassa, passes northward through Tanganyika, the great lakes of Central Africa, branches north-eastward towards Lake Rudolph, up the Red Sea, through Akaba to the Jordan Valley, a distance of 4,000 miles. In certain districts it shows itself as a strip of country let down between two parallel fractures. It has been compared to the cracks which can be seen in the moon. If we accept this as a reality, we have only to imagine this Great Rift fault to be extended as regards its length and breadth, and we have a trough in many respects similar to that which holds, not thirty lakes, but the waters of the Atlantic.

Just as the frequency of earthquakes has fluctuated during geological time, similar fluctuations have taken place during historical time. In Central Japan earthquake frequency had a maximum in the ninth century, and since that time, century after century, violent shakings have become less and less. In January, 1844, at Comrie, in Perthshire, twelve earthquakes were recorded. Now there may not be one per annum. At the present time, in consequence of the destruction of several large cities, the popular idea is that earthquakes are on the increase. As a matter of fact, the world as an earthquake-producing machine has a steady output. On the average about sixty very large disturbances are recorded, and the greater number of these, fortunately for humanity, have their origins beneath ocean-beds or in sparsely inhabited regions. In addition to these megaseismic efforts, it is estimated that about 30,000 small earthquakes take place per year, England's annual contribution to this number being about half a dozen. If we had records like these extending backwards through several ages, we might readily estimate the time when seismic activity would cease. When this ceases rock folding will also cease, and the degrading processes resulting in surface denudation will be unopposed. Bit by bit land areas will be reduced to sea-level, and the habitable surfaces, as we now see them, will be no more.

An interesting observation bearing upon megaseismic frequency is found in the analyses of registers relating to the North Pacific. On the west side of that ocean seismic frequency is greatest in the summer, while on the east side it is greatest in the winter. An explanation for this is sought for in the seasonal alteration in the flow of ocean currents, the oscillations of sea-level, and changes in the direction of barometric gradients, which phenomena are interrelated. In summer, off the coast of Japan, the Black Stream runs perhaps 500 miles farther north than it does in winter, while Dr. Omori points out that although barometric pressure may on the Japan side of the Pacific be low in summer, this decrease in load is more than compensated for by the increased height of ocean-level; the inference is that the pressure on the ocean bed is greater in summer than in winter, and this is the time of the greatest seismic frequency.

Another factor bearing upon earthquake frequency may perhaps be found in the change in position of the earth's pole. A chart showing the path of the earth's north pole indicates that its movements are by no means always uniform. Although at times these may be nearly circular, it also shows sharp changes in its direction of its motion. It has even been retrograde. If on a chart showing these pole displacements we mark the time positions of world-shaking earthquakes, it is seen that these are grouped round the sharper bends of the pole-path. World-shaking earthquakes have, in fact, been most numerous when the pole-path has deviated farthest from its mean position. The observations embrace a period of thirteen years, during which 750 large earthquakes were recorded. Although these earthquakes represent large mass displacements, it is not supposed that they would be sufficient to produce the observed pole movement. The pole movement, however, may have given relief to seismic strain, or both effects may arise from some common cause.

Mass displacements accompanying a megaseismic effort must, however, tend to produce some pole displacement, and thus set up strains. From time to time these should find relief in the weaker portions of the earth's crust. Large earthquakes should therefore occur in pairs, triplets, or in groups, after which we should expect a period of

quiescence. Out of 126 large earthquakes recorded between 1899 and 1905, I find that twenty of these appear as ten pairs, the members of each pair being in symmetrically located districts. This may or may not have been a matter of chance. The observation that a marked relief of seismic strain in one part of the world has frequently been followed by a smaller relief in some distant region also suggests the idea that earthquake begets earthquake. In my own mind the relationship of earthquake to earthquake has been fairly well demonstrated, but to place the matter beyond the borderland of doubt, large earthquakes must be compared in regard to space and time with their kind, with small earthquakes and with volcanic eruptions. All the volcanic eruptions of the West Indies have closely followed on the heels of great earthquakes which have originated, not in the West Indies, but on the neighbouring coasts of Central and South America. One general inference is that the faultings and freckles on the face of our world should have a distribution as symmetrically disposed as wrinkles are on the face of an elderly person.

The fact that so many earthquakes shake the whole world, or will agitate an ocean like the Pacific for many hours, indicates that the initial impulse must have been delivered over a large area, or that sudden alterations have taken place in the contour of ocean beds. With regard to the magnitude of the latter changes we have learnt much from cable engineers, who have given us many instances where cables lying in parallel lines, ten or fifteen miles apart, have been simultaneously interrupted, and ocean depths over considerable areas have been increased. The depth to which these large faults extend is a matter of inference. We may well imagine them as passing through the whole thickness of the earth's crust, and the displaced block falling to give up its energy to a nucleus which we know transmits undulatory movements all over our globe with uniform velocity. If we take this crust to be thirty miles in thickness, the block which was disturbed at the time of the Assam earthquake of 1897 would be represented by 1½ million cubic miles.

Following the initial impulse of a large earthquake, it frequently happens a few minutes later that a second severe movement is felt. In Japan this is popularly spoken of as the Yuri Kaishi, or the return shaking. This may be a second yielding within the disturbed district, but from its resemblance to the main shock it suggests an echo-like reflection. If we drop a bullet into a large tub of water, waves travel outwards to the sides of the tub, where they are reflected, and converge at the centre from which they set out. With the earthquake waves the reflecting surface may be represented by the roots of mountain ranges. If these are at varying distances from the origin, the reflected waves would give rise to complications at the focus. The transmitting medium for these waves I take to be the more or less homogeneous material which lies beneath the heterogeneous crust of our world. This transmits large waves with a constant velocity. In the case of the Californian earthquake, which originated on fault lines on the western side of that country, I should imagine the reflecting surface to be the Sierras, 200 miles distant. The wave group would travel to these mountains and back in about four minutes, and this is approximately the time interval between the first two large wave groups in seismograms I have of that disturbance. After the first echo or echoes, an earthquake usually dies out as a series of surgings, which frequently have a striking similarity to each other. One explanation of these rhythmical recurring groups is that they simply represent times when the movement of the ground has synchronised with the natural period of the recording instrument. Although the terminal vibrations seen on a seismogram may be attributed to this cause, it does not exclude the idea that rhythmical beats at an origin may result in rhythmical responses at a distance.

Side-issues of seismology are quite as instructive as the information we derive from the records of earthquakes. A long series of experiments which commenced in Japan, and were continued in the Isle of Wight, involved a series of investigations bearing upon the transpiration of plants. The fundamental object of these experiments was to determine whether valleys always retained the same form. Did they open and shut? To answer the question I set up on the two sides of a valley horizontal pendulums identical with those which are used to record teleseismic motion. These instruments, which are by photographic means self-recording, are exceedingly sensitive to small changes in level. What I found was that on fine days the booms of these instruments moved in opposite directions, each away from the bed of the valley. At night the motions were reversed, and the booms moved towards each other, that is, towards the bottom of the valley. Several instruments were employed, and the records were confirmed by the movements of the bubbles of sensitive levels. During the day the records indicated that the sides of the valley opened and at night they closed. The two valleys I worked upon behaved like ordinary flowers—they opened when the sun was shining and closed at night. The best explanation I can offer is that the phenomenon is largely dependent upon the transpiration of plants. This is marked during the day, but not at night. On a bright day a sunflower or a cabbage may discharge 2 lb. of aqueous vapour. A square yard of grass will give off 10 or 12 lb. The result of this is that during the day underground drainage has not received its full supply of water to load the bottom of the valley. At night time, when plants' transpiration is reduced, subsurface drainage is increased, and the load at the bottom of the valley is also increased. Therefore at night the bottom of a valley, in consequence of its increased water load, is depressed, and this is accompanied by a closing of its sides. During the day the load runs off, and the valley opens. This may also explain why soak wells in valleys and streams carry less water during the day than they do at night, and at the same time it suggests that the side of a valley is a bad place for an observatory. Every day as the world turns before the sun, lamp-posts and tall structures salute the same, whilst many valleys open. At night time these movements are reversed.

RESEARCH IN EDUCATION.

In scientific circles, the activity of a college or other institution is measured by the amount and value of the original work accomplished. In the future, the same standard will perhaps be applied to the departments of education in our universities and university colleges, and to all centres where teachers are being trained. There is at present too much dependence upon the doctrines and formulæ of the fathers of educational method and too little appeal to observation and experiment. The principles of educational science have yet to be discovered by investigation and placed beyond disputation, so that it will be possible to say what should be taught at various stages of mental development instead of trying to effect compromises between contending schools of thought.

We are glad, therefore, to notice signs of increasing interest in educational inquiry. At Manchester valuable

material is being collected by Prof. Findlay and Prof. Sadler, and we now learn that Bristol is moving in the same direction. A Committee of Educational Inquiry and Research has been formed in connection with the University College there—soon, we hope, to become the nucleus of a University of Bristol—with the object of establishing a library, museum, and bureau of educational information for the south-west of England. The programme put forward is at present provisional, but even if it is not carried out in its entirety the effort to promote systematic study of educational subjects has our hearty support.

In determining the details of its programme, the committee has been guided by its knowledge of the important work which is being done in the Department of Special Inquiries of the Board of Education, and it has also given consideration to the organisation and arrangements of the British Library of Political Science at the London School of Economics and Political Science, and of the Musée Pédagogique established in Paris by the French Ministry of Public Instruction and Fine Arts. It has been the intention of the committee in formulating its scheme to combine features which it has recognised as of value to its purpose in more than one institution. Stated briefly, the object of the committee is to provide for teachers and for those who are concerned in the local administration of education in the West of England opportunities for securing, at first hand, information as to the manner in which the problems which they meet in the ordinary routine of their work are being solved elsewhere in Great Britain and abroad.

At a later date the committee hopes to be able to undertake investigations supplementary to those of which the results have from time to time been published by the Board of Education in the series of Special Reports on Educational Subjects. The valuable volume on "Continuation Schools," published by the University of Manchester and edited by Prof. Sadler, is a conspicuous example of the success with which the investigations of a university department of education can be directed to elucidating the problems of local administration.

Provided that the institutions undertaking such investigations are in constant correspondence with each other, there need be little fear of competition. The danger is rather that valuable information may be lost to the public because it does not happen to be on the direct line of investigation upon which the institution which has collected it is for the time engaged. Co-operation between those who are prosecuting parallel inquiries is the best means of preventing the loss of valuable material. Local statistics are not infrequently required to supplement those prepared by a central authority, and the most effective and economical means of securing these is by the establishment of such a local bureau as is contemplated in the programme of the Bristol Committee.

HISTORY AND CURRENT EVENTS.

SIXTY years ago Europe was in convulsions. The nations rose against their rulers, being weary of the "oppression" which they had suffered since they overthrew Napoleon in 1814–5. Scarcely a State escaped; and even London was alarmed when the Chartists announced a meeting on Kennington Green and a march to Westminster. The complex organisation known as Austria-Hungary suffered perhaps most. Czechs of Bohemia, Magyars of Hungary, Croats and other Slavs in the south, and Italians in Lombardy-Venetia threw off the Habsburg yoke. Prince Metternich, who had governed Austria, and even all Germany, not to speak of Europe in general, resigned suddenly in March, and in December the Emperor Ferdinand abdicated in favour of his nephew, Francis Joseph, aged eighteen. Francis Joseph has had a difficult task throughout his reign, attempting to keep the peace between the wavering nations of his heterogeneous empire, and now he is about to celebrate his "diamond" jubilee.

IN the days when we used to speak of "the three estates of the realm," the Press, *i.e.*, the newspaper Press, was sometimes called the "fourth estate," and many were the disputes in the British House of Commons concerning the rights of that same "fourth estate." It gradually won "toleration," and it is doubtful if now it would be worth while for any member of the House to "call attention to the presence of strangers." Things are not so free in the German Empire as they are among us, and an incident which occurred on March 19th reminds us of our pre-democratic days. The Press reporters joined in the laughter which greeted a certain deputy, whereupon another deputy called them "Saubengels," which seems, being interpreted, to mean "pigs of fellows." The reporters thereupon withdrew, and for a week left the Reichstag unreported. They won, for their insulter apologised.

Is a "strike" war? Is it private warfare? If so, should the State prevent it, as the kingships of the Middle Ages grew by putting down "feudal" private warfare? New Zealand has a law which compels parties to a trade dispute to submit to "arbitration." A decision has been given in a trade dispute there inflicting a fine on certain miners. They say they will go to prison rather than pay. The Premier says he dislikes imprisonment, but "strikes and arbitration cannot be co-existent." In Australia, too, they have an Arbitration Law; but the trade unions oppose the method of wages boards, and declare they prefer strikes as a method of settling industrial disputes. In France there is growing a "Federation of Manufacturers and Business Men," who hold monthly meetings, and one of their vice-presidents said recently that "their energy and initiative ought to help them to obtain solutions independent of State intervention."

Is killing no murder if it is "political" killing? Was the killing of William of Orange, or of Henry III. of France, or of Henry IV. no murder? There was much controversy about these subjects in the sixteenth and seventeenth centuries, and, since politics were then concerned largely with religion, the discussions were theological in tone. We are instigated to ask these questions by two paragraphs in the same newspaper of last March. One is from Portugal, and says: "Justice, patriotism, and loyalty, not to speak of civilisation, demand the arrest and trial of those guilty of the murder of King Carlos." The other reports that certain French authors are urging the Swiss authorities to refuse the extradition of a Russian Socialist who, in January, 1906, killed a prefect of police, on the ground that his deed was "purely political." The question has a double aspect. Does the State regard such deeds as crimes? Does the Church regard them as sins?

An Abstract of English History. viii+120 pp. (Oliver and Boyd.) 8*d.*—The only complaint we have against this book is as to its title. It is not an "abstract." It is a slight sketch of the most interesting things in English history down to 1707, intended, apparently, for Scottish schools. There are thirty-nine illustrations and maps, and the text is good.

ITEMS OF INTEREST.

GENERAL.

The formation of the new Ministry has led to changes at the Board of Education. Mr. Walter Runciman is the new President of the Board, in succession to Mr. Reginald McKenna, who has become First Lord of the Admiralty. Mr. T. McKinnon Wood succeeds Mr. Thomas Lough as Parliamentary Under-Secretary to the Board of Education.

A serious fire broke out in Mr. Somervell's house at Harrow School at the end of March. The local fire brigade turned out promptly, and with assistance from two other stations prevented the fire from spreading to adjacent buildings. The boys' part of the house, however, was gutted; fortunately, no lives were endangered, the boys being out of the house at the time. It was this general absence that gave the fire time to get a firm hold before discovery, and probably internal efforts would have been of little avail. But it emphasises once again the need of taking every possible precaution against fire risks in schools.

The Eton fire of six years ago stirred up many schools to install or overhaul fire-extinguishing apparatus and life-saving appliances. The latter are, of course, the most important. Every school building should be equipped with means of escape both from within and from without. Parts of buildings from which there are not alternative exits should be provided with canvas chutes; every school should possess a light fire-escape, by means of which any part can be reached from the outside; boys in every house should be drilled occasionally in what to do in case of fire. Indoor hydrants and hand-pumps are mose useful and effective in dealing with an outbreak in its initial stages. Many other details there are which should be constantly looked to—doors leading outside should open outwards, passages should always be clear, and so on. The most elaborate apparatus is of little use, however, unless it is kept in good repair and ready to be brought into instant use. Fortunately, fires are not daily school events, but this very fact is in itself a danger. Every appliance should be inspected weekly and tested monthly. A key in the wrong place or an empty bucket may lead to disastrous results, for a fire gives no warning and little time to think.

In our last issue we referred (p. 151) to the visit of Canadian and American teachers to this country next autumn. We understand that the visitors are expected to arrive in a succession of small parties between September next and February, 1909, and will visit the principal towns of the United Kingdom, investigating more particularly our primary, secondary, and technical education, and the training of teachers. For this purpose they will see most of the great colleges and universities, the principal technical institutions, the great public schools, and the preparatory schools in connection therewith. A certain number will also investigate special branches, such as agricultural and mining colleges, reformatory schools, schools for adults and defectives, and domestic economy schools. The investigations will be made under arrangements with the local county and other authorities concerned, and the teachers will be taken charge of by reception committees, headed by the mayors and other influential residents in the respective districts, and education officials.

The London Geological Field Class excursions for the study of the Thames Basin will commence on Saturday, May 9th. Mr. J. W. Jarvis, St. Mark's College, Chelsea, S.W., is the honorary secretary, and full particulars may be obtained from him.

The annual conference of the National Union of Teachers was held at Hastings during Easter. The Union now has a membership of 63,000 teachers, some of whom teach in schools other than elementary. The address of the president, Mr. W. A. Nicholls, Eglinton Road Council School, Plumstead, Kent, was delivered on Easter Monday. In it he dealt chiefly with the proposals of the Bills recently introduced in the two Houses of Parliament respectively by Mr. McKenna and the Bishop of St. Asaph. The question of religious education was discussed fully and temperately, and the objections of the Union to the "contracting-out" clauses were explained. The Medical Inspection Act and the Act for the Provision of Meals were also passed in review. We cordially endorse the remarks of Mr. Nicholls on evening continuation schools. "We need," he said, "higher education for the workpeople of this country, but at present there is too often a great gap between the time of leaving the primary school and attendance at classes for adults. Too often education ceases altogether on leaving the day school; but what England needs to-day is an educated democracy, and the continuation schools will help to secure this. That there is no real antagonism between learning and labour, as so many fear, is the idea which led to the establishment of a joint committee of seven university men and seven representatives of labour at Oxford last summer under the auspices of the Workers' Educational Association. It is quite possible, and eminently desirable, that we should have a great body of educated workpeople, not ashamed to be still engaged in honest manual toil. I hope that we shall never foster the idea that it is more respectable to be a clerk, a trader, or a teacher than to be a carpenter or a blacksmith. 'Honour and shame from no condition rise.' This great body of educated workpeople, growing in numbers and influence, will, knowing the value of education themselves, educate the popular mind to the view that of all local and imperial expenditure that on education affords, taken in conjunction with other social reforms, the best return for outlay. *We as teachers alone can never do this.* We may help, but we shall always be more or less liable to the imputation of interested motives. Our hope is in the people themselves, as their hope in turn must be in education, because intellectual force wins in the long run."

The University Extension Board of the University of London has decided again to arrange a short training course for lecturers, to be held in the summer term in the University buildings, South Kensington. The numbers who attended the three previous courses showed that such a course meets the needs of young graduates and others desiring to lecture who have had no experience and have no opportunity of gaining practice in lecturing. The testimony of those who attended shows that the course was highly appreciated, and that its continuance is desired. The course is to consist of ten weekly meetings, on Monday evenings from 6 to 8 o'clock, and began on April 27th. Four lectures on "The Art of Lecturing" are to be given by Prof. John Adams, and four lectures and demonstrations on "The Management of the Voice," by Dr. H. H. Hulbert. These will be followed by four meetings for practical work. The final two meetings of the course will be given up entirely to practice in lecturing. Each student will have an opportunity of delivering a portion of a lecture upon a subject settled beforehand after consultation with Prof. Adams, who will afterwards give hints and suggestions with regard to the

arrangement of matter and the form of delivery. Dr. Hulbert will give similar help in connection with the management of the voice.

A NATURE-STUDY course for women will be held at the Horticultural College, Swanley, Kent, from August 1st to August 15th, to help teachers who are desirous of extending their knowledge of nature-study. Most of the instruction will be given (weather permitting) out of doors, rambles in the country under the guidance of experienced teachers being the chief feature. Miss Hibbert-Ware, of Queen Margaret's School, Scarborough, and Mr. Tabor, will lead combined excursions for studying birds, pond life, insects, wild flowers, trees, grasses, &c., in their different environments. Miss K. M. Hall, curator of the Stepney Borough Museum, will give the inaugural address on August 1st at 8.30 p.m., the subject of which will be "Nature-study as a Preparation for Life." The college gardens, greenhouses, orchards, farm, and fruit-preserving appliances will be in working order, and students will be able to obtain an insight into the work carried on in each department. Miss M. Agar will give demonstrations and instructions in simple gardening, and on the care of school gardens. Demonstrations in dairying and poultry keeping will be given by Miss M. Dawson. As 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. It is hoped to combine the natural history excursions with points of antiquarian, artistic, and other interest in outlying districts, and endeavour will be made to render the course useful, both for home life and school work.

REPLYING to a deputation from the Secondary Schools' Association, which waited upon him on April 3rd to urge certain changes in the secondary schools' regulations issued last year, the President of the Board of Education made known important facts. Speaking of Article 20, which fixes the proportion of the free admissions to secondary from elementary schools, he said the chief complaint of the deputation was with respect to the 25 per cent. of free places. As a matter of fact, reductions have been made in about ninety schools. It is impossible to lay down definite principles upon which the Board has acted in making those reductions. An authority making a very large provision of free places in one type of school may have another higher type of school in which experience has shown that it would be impossible to get 25 per cent. of scholars from the public elementary schools capable of taking that class of education. In such a case the Board has more than once allowed the reduction of 25 per cent. in the higher type of school, regard being given to the fact that ample provision has in fact been made by the local authority in the first type of school. There is not, he continued, a shred of evidence to support the statement that the Board is impairing the education of the country by the regulation as to the 25 per cent. of free places. With regard to Article 5, the Conscience Clause, it has not been waived by the Board in any single case. Article 44—providing that no grants shall hereafter be payable in respect of certain schools not on the grant list for 1906–7—he pointed out, is an article which can be amended at any time if found that it is working practical inconvenience; but, up to the present moment, the Board has received no evidence that it has worked any inconvenience.

A MEETING of protest against that part of the Government Education Bill which would authorise "contracting out" of voluntary schools from local control and rate aid is being organised by the National Union of Teachers, and will be held in the Queen's Hall, Langham Place, London, on May 2nd, when members of Parliament and other speakers will support a resolution condemning those proposals.

IT is proposed, in connection with the Franco-British Exhibition to be opened on May 11th, to hold a "children's week," during which parties of French children and their teachers will be present. Both the French and British authorities have given their approval to the scheme. During the week, French and English children will take part in a daily course of instruction. This course will include examples of oral instruction in French and English schools. There will be physical exercises in the grounds, designed to show training in bodily strength, and gymnastics and games which the French and English children will play together, and also other games special to the two countries. The children's week will conclude with *tableaux vivants*, in which the children of both nationalities will take part, symbolical of the glories of peace and the good intentions of the *entente cordiale*. Verses specially written for the occasion will be recited in French and English by a child of each nation.

THE first International Moral Education Congress is to be held in London from September 23rd to 26th next. The congress is designed to improve the moral education offered in schools. To attain this object the organisers have appealed for support to theoretical educationists and educational officials in all parts of the world, and there has been a hearty response from all countries. The congress will restrict itself to a general survey of *school* problems from a moral point of view, leaving untouched the questions of home, religious, and philosophical education. Matters of school organisation, methods of training and teaching, discipline, and direct and indirect moral instruction will be discussed. The congress will be distinguished by other features. A specimen moral instruction lesson will be given respectively in English, French, German, and perhaps Italian. Reports based on widely circulated *questionnaires* will be prepared. An exhibition of literature bearing on moral education will be organised, as well as one of pictures and plastic productions. The vice-presidents include educationists of world-wide reputation, and the general committee is composed of distinguished representatives of most European countries, the United States, and Japan. Full particulars may be obtained from the general secretary, Mr. Gustav Spiller, 6, York Buildings, Adelphi, London.

To further the interests of the forthcoming congress on moral education, a well-attended public meeting has been held at the College of Preceptors, under the presidency of Lord Avebury, when an address was delivered by Sir Edward Busk. He dwelt upon the importance of moral education, pointing out that everyone is called upon continually to act, while a few only can extend knowledge. It is necessary to form correct habits so as to be able to follow higher motives of action, to be prepared for difficult emergencies, and to create a character which is the only possession of which anyone can be assured. This greatest of all educational ends can be furthered by direct moral instruction, by surrounding all instruction with a moral atmosphere, supervising games, sympathy and judicious kindness, and personal example and influence. Teachers who are to convey moral instruction must be trained to recognise that, as the race advances, higher possibilities of moral action are open to view, and to see

that sanctions were not necessary. Teachers must not, he continued, dwell upon these considerations in the lessons given to children, but should bring home the simple categorical imperative of morals and lead the children to entertain a deep and enthusiastic reverence for what is noble.

The second volume of the report of the U.S. Commissioner of Education for the year ending June 30th, 1906, has now been published. From its 663 pages of matter, mostly statistical, an abundance of useful information about American education in its various grades can be obtained. It is interesting to find tables showing the relative popularity of the various subjects of the secondary-school curriculum. The preference now shown for certain subjects is of some years' standing, and there appears in the last ten years a disposition for the preference to be permanent. Algebra is taken up most widely, 57·6 per cent. of the total number of secondary-school pupils in both public and private high schools and academies studying it. English literature comes next with 50·5 per cent., followed by Latin, 50·2; rhetoric, 49·4; history (other than that of the United States), 42·2; geometry, 28·4; German, 21; physical geography and physiology, each 20·6 per cent. French attracts only 11, physics 15, and chemistry 6·9 per cent.

The Commissioner also points out that, of the number of secondary-school pupils in the different years of the school course in the high schools of certain American cities, 43 per cent. were in the first year, 26 per cent. in the second, 18 per cent. in the third, and 13 per cent. in the fourth year, or that in which the secondary-school course is completed. Upon this basis the following estimate may be made:

American secondary-school pupils in 1905–6 ...				924,399
43 per cent. in first year	...	...	...	397,491
26 ,, second ,,	...	...	...	240,344
18 ,, third ,,	...	...	...	166,392
13 ,, fourth ,,	...	...	...	120,172

The number of secondary-school pupils to each 1,000 of population in 1906 was 11·01, and the number of students in institutions of learning above the high school was 279,270, or 3·33 per 1,000. Of the 8,031 public high schools in the country, there were forty for boys only and twenty-nine for girls only, all the others being co-educational. Of the 1,529 private high schools, there were 304 for boys only, 500 for girls only, and 725 co-educational.

We have received a copy of the report of the director of the Department of Technical Education and Manual Training of the Auckland Education Board, New Zealand. Mr. George George has been in charge of the Department for five years, and the report provides a gratifying record of progress during the period. There are chapters dealing with handwork in primary schools, agricultural education, agriculture and nature-study in primary schools, cookery and woodwork at the manual training schools, technical training of teachers, continuation and technical classes in country centres, the Christchurch International Exhibition, and Auckland Technical College. Excellent work has been done in all these directions, and it is expected that the result of Mr. George's tour through Europe and the United States, during which he is studying educational methods, will be still further to modernise the educational institutions of Auckland.

The annual meeting of the New Zealand Educational Institute was held recently in Auckland, when a definite promotion scheme received careful consideration. For the purposes of administration New Zealand is divided into thirteen education districts, each controlled by an Education Board of nine members. These members are elected in three groups of three each from constituencies formed by the school committees. Every school has its immediate local affairs managed by a school committee consisting of five, seven, or nine members, according to the size of the school, chosen by the householders of the school (*not* the education) district. When a teacher is to be appointed applications for the position are received by the Education Board. That body considers the applications and forwards to the school committee a certain number of names of candidates, any one of whom the Board would be prepared to appoint. The names are usually arranged in order of the Board's preference. The committee then chooses one of the applicants, who is accordingly appointed by the Board. This practical appointing by the school committees has been found arbitrary and unsatisfactory, and teachers have for long been endeavouring to get something done to improve matters. Now that a definite scheme has received the official sanction of the New Zealand Educational Institute, it seems, since the present Minister of Education appears to be sympathetic, that improvements will be introduced.

The seventy-fourth annual report of the Bootham School, York, Natural History, Literary, and Polytechnic Society, dealing with the work done in 1907, shows that where masters interest themselves in the out-of-school life of the pupils a great deal can be done to provide boys with healthy resources for leisure hours. Not only do the boys belong to small societies for the open-air study of different branches of natural history, but they form circles for the study of archæology, for the appreciation of literary masterpieces, the pursuit of manual work, and the cultivation of similar wholesome pastimes. A specially noteworthy feature of the report is the self-effacement of the masters, who, content with encouraging the self-activity of their boys, leave the management of the clubs as much as possible in the boys' hands.

The Rev. Cyril Alington, of Eton College, has been appointed headmaster of Shrewsbury School in succession to Prebendary Moss.

SCOTTISH.

During the past month meetings were held in various parts of Scotland to press upon the Government the urgent necessity of introducing and passing a Scottish Education Bill this session. Enthusiasm and unanimity marked all the gatherings, and it is safe to say that never before have such varied interests combined for the furtherance of the same object. Representatives from municipalities, county councils, and trades councils joined with members of the universities, technical colleges, and teachers' associations in demanding an Education Bill framed on broad and sensible lines. Suggestions as to the nature of the proposed Bill were made in the course of the various proceedings, but there was evident everywhere a desire to refrain from discussing antagonistic schemes, and to accept a measure that followed the lines of least resistance. The meeting in Glasgow differed from those in Inverness, Hamilton, Dundee, and other places only in being larger and, if possible, more representative. Sir James Fleming voiced a very general feeling when he said that the Scottish Members of Parliament were wanting in "go" and life. They did not cry out loud enough for what they wished, and being quiet and docile they were easily put off. One of the most notable features in the Glasgow meetings was the attack made by speaker after speaker on the autocracy

of the Education Department. Prof. Latta declared that the Provincial Committees were simply and solely creatures and servants of the Department. At present the whole education of the country was in the hands of one man, and however able and experienced he might be, that was an impossible and dangerous situation. What he wanted was an Education Council, where educational questions could be submitted to a fair and independent examination and discussion. The unexpected and dramatic announcement of the introduction of a Scottish Education Bill may fairly be regarded as the Government's answer to these meetings.

THE spring meeting of the Classical Association was held this year in St. Andrews University. In the absence of Prof. G. G. Ramsay, the Rev. Dr. Heard, Fettes College, occupied the chair. An analysis was submitted of the replies received in answer to the queries sent out by Prof. Ramsay. From this it appeared that four out of every five replies were in substantial agreement that the curriculum was too uniform and rigid in character, and that it was a mistake educationally to lay down a fixed amount of time for certain subjects and not for others. Mr. McKenzie, Madras College, St. Andrews, in speaking on the report, said that the new regulations, if persisted in, would prove the ruin of higher education in Scotland. Several speakers made it abundantly clear that they had no objection to science and drawing *per se*. What they objected to was singling out these subjects for special treatment by insisting on a minimum amount of time for them. The new regulations made no allowance for individual tastes and capacities, the wishes of the parents, and the needs of the localities. Everything was sacrificed to the chimerical average boy. The poor girls receive no consideration whatsoever, even as averages. The association passed resolutions against uniformity and preferential treatment, and authorised its committee to take the necessary steps to have these resolutions considered by the proper authority.

MRS. OGILVIE GORDON has for several years past interested herself in the question of employment for children. From personal investigation she has learned what a tremendous wastage goes on every year from children drifting into employments for which they have no capacity, or from which there is no outlet after a certain age. She has therefore prepared, with infinite labour and at very considerable expense, a "Handbook of Employments," giving details of the various occupations open to boys and girls, the wages, the prospects and the conditions in each, as well as a mass of interesting details on related subjects. Mrs. Ogilvie Gordon deals very fully with the decay of the apprenticeship system and the evil results that have flowed therefrom. Employers must be educated to see that the better trained and educated their young employees are, the more useful they will prove themselves to be. At present young folk undergo no real apprenticeship. They pick up their knowledge in haphazard fashion, but of real training and help they get none. She urges that employers and school authorities should combine to secure a continuance of the education of the boy or girl after school. She further urges that employment bureaus should be established in connection with the larger school boards. Such a bureau should be under the control of a joint committee of members of the school board, town council, trades council, and chamber of commerce. The committee would be aided by an organiser or director at a good salary. He should interview boys and girls and their parents and guardians in regard to further educational courses and the most suitable employments. He should prepare leaflets, pamphlets, and circulars giving information in regard to the educational facilities, bursaries, and maintenance grants in the district. It would be his duty to keep in touch with the general requirements of employers in the neighbourhood, and keep up-to-date facts and statistics about employment in the district and throughout the country generally. Mrs. Ogilvie Gordon's "Handbook of Employments" deserves the most careful study from all educationists and employers of labour. It is published by the Rosemount Press, of Aberdeen, and its price is 1s.

A VERY important document has just been issued by the secretary of the Carnegie Trust. It gives the proposals for the next quinquennial distribution of funds under clause A of the Trust Deed. The scheme provides for the allocation of no less than £200,000 to the four universities within the next five years. St. Andrews is to get £7,500 per annum, or a total of £37,500; Glasgow, £11,000 per annum, or a total of £55,500; Aberdeen, £8,000 per annum, or a total of £43,000; and Edinburgh, £11,600 per annum, or a total of £58,000. Large additional sums are also allocated to extra-mural schools and to technical colleges. While these funds are to be applied for certain general purposes, no hampering conditions are attached to them such as the Education Department hedges round all its grants. The value and usefulness of the gifts are greatly enhanced thereby.

ST. ANDREWS PROVINCIAL COMMITTEE announces a series of vacation courses that should prove highly attractive. These courses are to be open to teachers in primary, intermediate, and secondary schools at a very moderate fee. They are pretty evenly distributed between academic and professional subjects. The former include lectures and demonstrations in experimental psychology, phonetics, voice production, nature-study, and school gardening. The professional subjects include the teaching of history, the teaching of geography, the teaching of mathematics, and the teaching of classics. A staff of eminent teachers has been engaged, including Prof. Burnett, classics; Prof. Lyde, geography; and Prof. Gibson, mathematics. The classes should be a great success, for the "grey city by the sea," with its breezy links, its historical associations and old-world atmosphere, seems to combine ideally all the requirements of a vacation-course centre.

A MEMORANDUM has been issued by the Scotch Education Department providing for an increase in the grants for agricultural education from £2,000 per annum to £10,000. It is proposed to add to the staffs of the agricultural colleges additional officers to give continuous instruction in various branches of agriculture at selected centres in each county, to provide instructors for dairying, poultry and bee-keeping, and to facilitate the creation and suitable use of gardens and instruction plots in connection with schools in rural districts.

THE new regulations for secondary schools have led to important changes in the Edinburgh Merchant Company Schools. The demand for increased laboratory and workshop accommodation can only be met by reducing considerably the numbers in attendance. The cost of staffing, instead of being diminished thereby, will be increased, owing to the restrictions in regard to the size of classes. The increased financial demands have compelled the Merchant Company to give up one of the most prosperous of these schools, the John Gillespie, a primary fee-paying school with an advanced department and having a total attendance of 1,600 pupils. This has been one of the most successful of the Edinburgh schools; but the buildings are

old, and the Department is no longer prepared to pay grants to it unless it is entirely reconstructed. It is hoped that the School Board may come to the rescue and take over the school as a going concern.

By the death of Mr. J. W. Crombie, M.P., education has been deprived of one of its ablest advocates and the teaching profession of one of its best friends. During the discussions in the House of Commons of the various (abortive) Education Bills of the past six years, Mr. Crombie showed that he had a complete grasp of the whole subject. He was always willing to give counsel and help to deputations of teachers to the House of Commons. He was a strong supporter of the teachers' plea for improved superannuation and tenure conditions. The sympathetic treatment of both these questions in the new Bill may fairly be ascribed to his friendly interest and influence.

The Education (Scotland) Bill was introduced by the Secretary for Scotland and read a first time under the ten minutes' rule. It is not an ambitious measure, but it contains a number of very useful provisions.

IRISH.

The educational event of the month is the introduction in the House of Commons by Mr. Birrell of the Irish Universities Bill. This long-expected Bill is radically different from Mr. Bryce's scheme last year, and bids fair to offer an acceptable settlement of a long-standing and undoubted Irish grievance. The proposals briefly are to break up the existing Royal University and to establish out of the *disiecta membra* two new teaching universities. The Queen's College, Belfast, as was urged by Lord Kelvin shortly before his death, is to be raised to the status of an independent university. The other two Queen's Colleges of Cork and Galway are, with a new college in Dublin, which will replace the present University College, to form the second university. There will thus be three teaching universities in Ireland of a fairly homogeneous character, Trinity College remaining, as it is at present, the only constituent college of Dublin University.

The names of the two new universities have not been decided. They are both to be like Trinity, non-denominational in theory; but it is obvious that one will be markedly Protestant and the other markedly Roman Catholic, while at the same time the lay element in both will be strongly predominant. The endowments of the colleges are to be increased. The Royal University has at present £20,000 a year from the Irish Church Fund, and the three Queen's Colleges have received on an average: Belfast, £13,000; Cork, £12,250; and Galway, £10,500 a year from the Exchequer. The Exchequer grant is to be increased to £80,000, and Belfast will receive £28,000 a year, Cork £18,000, Galway £12,000, and the new college in Dublin £32,000. Building grants are to be made: £150,000 to the new college in Dublin, £60,000 to Belfast, £14,000 to Cork, and £6,000 to Galway. The scheme seems assured of general support, although there will doubtless be criticism of details. Some Presbyterian opposition seems likely to the scheme as a whole, while the grant of £150,000 for building in Dublin is considered by many inadequate. The relation of Maynooth to the new university scheme seems likely to raise difficulties, and at present the Roman Catholic hierarchy has made no definite declaration of its position towards the Bill.

It is at last definitely stated that the authorities of Dublin University have acquired in Rathgar, a suburb of Dublin, a house with sufficient grounds attached to serve as a hall of residence for women students. Mr. Birrell made a mistake in the House of Commons, in alluding to women students, by saying that they were only admitted to examinations in Trinity College. This is not the case, as women are admitted to all lectures in arts and to the medical and law schools, and obtain their degrees in exactly the same way as men students. Last term there were 104 women students on the books, seventy-five of whom attended lectures, and thirty came from outside the Dublin area.

The Department of Agriculture and Technical Instruction has drawn up a new syllabus for the provision of instruction in navigation in maritime towns in Ireland which they recommend to local committees of technical instruction. The headings of the syllabus are: Figure of the Earth, Time, Mariner's Compass, Leeway, the Log-line and Patent Logs, Sounding, Charts, Sailing, and Weather.

The Civil Service Estimates estimate the Development Grant for the year ending March 31st, 1909, at £185,342, which, with the estimated balance from the present year, will amount to £276,700. This, which was originally an education grant, has been largely diverted to other purposes. The Land Stock absorbs £100,000; the Congested Districts Board, labourers' cottages, railways and harbours, more than another £100,000; and the amount allotted to education is as follows: Trinity College, £5,000; Marlborough Street Training College (for building), £2,792; national school buildings, £25,000 (first instalment of £70,000); training colleges, £4,376; assistant teachers in national schools, £34,468; and technical instruction, £7,000.

The Irish Association of Women Graduates and Candidate Graduates has unanimously passed a resolution condemning the present group system of the Intermediate Board as not providing the best foundation for a university course, and is giving its support to a plan whereby it is hoped this defect may be modified, and more encouragement given to girls to pursue mathematical and classical studies.

WELSH.

The University College of North Wales, Bangor, has raised the question of the exemption of university colleges under Schedules A, B, and C of the Income Tax in respect of income under the designation of "charitable purposes." It appears clear, according to the Attorney-General, that claims may be admitted in respect of funds under specific trusts for scholarships, prizes, &c., but, according to his contention, not those funds which are devoted to the "general purposes" of the colleges. The counsel for the college contended that all money received, both for specific and general purposes, for the object of promoting education came under the head of "gifts for charitable purposes." Judgment was given in favour of the college, viz., that funds provided for the general purposes of the college are "trusts for charitable purposes."

Mr. Herbert Roberts, M.P., has expressed to a North Wales audience his hope that the mind of Wales will remain fixed on the creation of a Council of Education for Wales, and that the urgency of the question should be pressed on the Government. He has also spoken favourably on the Education Bill introduced by the Bishop of

St. Asaph in the House of Lords, pointing out that the Bishop's Bill recognises the principles of popular local control and the abolition of tests in all public elementary schools receiving Parliamentary grants. With regard to the facilities for religious instruction as desired by parents, and to be given at the cost of the denominations concerned, Mr. Roberts acknowledged there were certain practical difficulties, but in the interest of peace, and having regard to all the circumstances of the situation, he was quite prepared to consider whether a solution of the question at issue upon the lines indicated was not possible.

AT the annual prize distribution at Rhyl County School, Prof. W. Lewis Jones commented on the "multiplicity and superfluity" of advice offered to the Welsh County School. But he himself could not resist the temptation of offering some friendly and incisive criticism. He fears lest the machinery of the Welsh educational system should arrest individual initiative and check natural freedom and growth in the schools themselves. He thinks the tendency is towards too excessive and too elaborate an administration. He further regards over-examination of the pupils as one of the evils of the system, for it leads to competition in the schools which may be described as "demoralising." The efficiency of the secondary schools depends on the efficiency of the elementary schools, and Prof. Lewis Jones therefore welcomed the attempt of the Bishop of St. Asaph to bring about peace on the religious disputes, so as to pave the way for greater direct educational attention.

THE Governors of the Portmadoc County School are protesting against the action of the county authority in granting to the Bangor and Llandudno County Schools £8 per annum for the instruction of bursars, whilst only £4 is paid by the authority for bursars in the Portmadoc County School. The reason is, of course, that the fees paid by ordinary pupils in these schools is similarly different from the Portmadoc fee. The complaint is that the higher fees paid by pupils make such schools the "classy" schools of the county, and this status is increased by giving a further £4 for each of the bursars. The argument of the Education Committee was said to be that "the relative cost of maintenance of the bigger schools is greater." It does not seem to occur to the Portmadoc Governors to consider whether their ordinary fee is not too low.

PROF. J. E. LLOYD, of Bangor, has also had occasion to offer criticism on the Welsh educational system. He said lately at Wrexham: "Whilst we often speak of the Welsh educational system as a remarkably complete one, it is not so in the two important respects of technical and evening school work." It is undoubtedly beginning to be strongly felt in Wales that the evening continuation school must become a stronger institution, if the work of the elementary schools is to be made the most of for those pupils who do not go into the secondary school. Whilst most people will accept Prof. Lloyd's view that the evening school should have a direct bearing on the occupations of the pupils, many also will agree with him that the element of disinterested culture should not be "neglected," and that "provision should be made for recreation."

THERE is at work in Liverpool an organisation for archæological excavation and research in Wales and the Marches, of which Prof. J. L. Myres, of the University of Wales, is at present the acting secretary and convener. The following interesting letter has been received from Mr. George Meredith with regard to the work of the society:—"Researches that may even chance to throw some light on the period of the Roman occupation of Britain would be of priceless value to our national history and a refreshment to Welshmen. We cannot hope to know in what degree Roman civilisation affected the minds and put a polish on the bearing of the primitive people: it may well have been to an extent sufficient to justify a belief in the real foundation of the legends and poems that have come to us, showing a spirit of courteousness and chivalry in striking contrast with the barbarism of the subsequent invaders. But any effort is worth the cost that we may know more than we do at present. The Liverpool Committee for Research has undertaken a work deserving the support of the nation—I need hardly say, of Wales."

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

A German Reader and Theme-book. By C. Thomas and W. A. Hervey. ix+438 pp. (Bell.) 4*s.* 6*d.*—This graduated reader contains varied material. The early pieces are quite simple, consisting of anecdotes, fables, &c. There are also a complete comedy by Fulda, four extracts of a historical character, and a number of well-known poems. Full notes are added, with many references to Thomas's Grammar. Sometimes there is an excess of technicality; we see no advantage in such terms as dative of the beneficiary object, presumptive future, dimidiative numeral. The renderings, of the poetry in particular, are occasionally unsatisfactory; thus in Goethe's "Der Fischer" the words *kühl bis ans Herz hinan* are translated "with all his being cool," and *rauscht hervor*, "emerges with a gentle splash." There is a *questionnaire* on sections 1 to 17, and themes (*i.e.*, sentences for retranslation) are supplied for sections 1 to 22. A very full vocabulary completes the book.

Heine's Book of Songs. Translated by John Todhunter. xvi+279 pp. (Clarendon Press.) 3*s.* 6*d.* net, on India paper 4*s.* 6*d.* net.—We sincerely wish that Dr. Todhunter had issued a short selection from his renderings, for some are very good. The great majority, however, show that Heine's poems, as a whole, are untranslatable. Where Heine produces admirable effects by sheer simplicity, Dr. Todhunter is driven by the exigencies of rhyme to introduce unusual words, or to put up with bad rhymes, or to repeat himself; and thus the effect is altogether different from that which we obtain when reading the original. In rhymeless poems Dr. Todhunter is more often successful, as is natural; some in the "Nordseecyclus" are happily rendered. But, speaking generally, we are sorry that he wasted so much energy on a hopeless task.

M. von Ebner-Eschenbach, Krambambuli. Edited by D. L. Savory. viii+102 pp. (Rivingtons.) 1*s.* 6*d.*—Mr. Savory here presents us with the third volume of the "Direct Method Elementary German Texts," and has edited the venerable author's short story with his wonted care. The text is again a little difficult for beginners; the exercises are relatively easy. We regret that Mr. Savory yielded to pressure and supplied a vocabulary, which in a "direct method" book is altogether out of place; and we condole with him in the publisher's choice of an illustrator. We have had some æsthetic shocks on opening volumes in Messrs. Rivingtons' French series, but we have never set eyes on a more dreadful trio of pictures than are to be found here. Fortunately, they can be torn out without damage to the text.

Der neue Leitfaden. By L. M. De La Motte Tischbrock. x+126 pp. (Murray.) 2*s.* 6*d.*—This book "was originally intended for grown-up students, but has been employed with excellent results in the case of boys at school," so the author tells us in his preface. The former statement we can well believe, for the amount of grammar and vocabulary is very great—too great, we should have thought, for comparatively young beginners. The method is, generally speaking, on reform lines, but the inclusion of German-English vocabularies in each lesson will appear a grave drawback to many. It should also be added that there is translation from English into German at the very outset. German type is introduced quite early, in the fourth lesson. In the tables of declension we notice the old bad order: Nom., Gen., Dat., Acc. In connection with the first term's work, the pupils are expected to read Uhland's poem "Die Rache," which is clearly much too hard. We do not feel that we can recommend this book for ordinary school use.

Science German Course. By C. W. P. Moffatt. xii+228 pp. (Clive.) 3*s.* 6*d.*—The London University regulations for candidates for a science degree have given a welcome impetus to the production of German science readers, of which this is one of the best. Mr. Moffatt gives a sensible outline of German grammar, and a very good selection of extracts for reading, bearing on mathematics, physics, chemistry, geology, botany, and zoology, together with useful vocabularies of technical terms in each of these branches of science. The book is carefully printed.

An Old High German Primer. By J. Wright. xii+176 pp. (Clarendon Press.) 3*s.* 6*d.*—Students of Old High German are familiar with the excellent little book of which this is the second edition. Prof. Wright has rewritten the phonology almost entirely. We may hope that he will not have to wait another eight years before the next edition is called for.

International Language, Past, Present, and Future. By W. J. Clark. vii+205 pp. (Dent.) 2*s.* 6*d.*—This book deals in a somewhat discursive spirit with the advantages of an international language and the objections that have been urged against it. Its purpose is to spread a knowledge of Esperanto, which undoubtedly has outstripped its rivals owing to the remarkable ability of its inventor. To those interested in the question of an international language, a perusal of the book may be recommended.

C. F. Meyer, Gustav Adolfs Page. Edited by O. Heller. vi+79 pp. (Heath.) 1*s.*—This is a very fine story indeed, and we are grateful for this edition of it. A brief introduction gives some details of Meyer's career. The notes, which consist mainly of English renderings, are generally good.

Dictionary of Quotations (Spanish). By T. B. Harbottle and Martin Hume. vii+462 pp. (Swan Sonnenschein.) 7*s.* 6*d.*—A very excellent compilation, worthy to take a place beside the volume of French and Italian quotations issued by the same publishers. The renderings in some cases appear particularly happy.

R. Lichtenberger, Mon petit Trott. Edited by Alec Cran. 120 pp. (Nelson.) 1*s.* 6*d.*—Many know little *Trott*, and will welcome these pages from M. Lichtenberger's charming book, which have been well selected. Here and there the editor might have deleted a realistic touch which is a little objectionable. The text (fifty-six pages) is followed by passages for retranslation (twenty-seven pages) and a vocabulary which is tolerably complete. The omission of such words as *madame*, *arbre*, can be justified; but *cloporte* (p. 15) should certainly have appeared in the vocabulary. It should be noted that there are a good many rather difficult words and phrases in the text, which renders it suitable only for a *good* intermediate class.

A Short French Grammar. By Otto Siepmann. xxviii+182 pp. (Macmillan.) 2*s.* 6*d.*—This is really a very good book. It is quite wonderful what Mr. Siepmann has managed to get into 200 pages. Not content with giving us a singularly well-presented *résumé* of French accidence and syntax, he has included some very useful sections on the pronunciation and spelling, and valuable chapters on prosody and derivation. Throughout he shows his notable skill as a teacher.

Classics.

Classical Association: Proceedings, 1907. Vol. v. With Rules and List of Members. 174 pp. (Murray.) 2*s.* 6*d.*—The interest of this volume is twofold: professional and scholarly. For the first we have the Reports of the Curricula Committee and of the Pronunciation Committee, with the debates on them; for the second, a charming address by Mr. Butcher on "Greek and the Classical Renaissance of To-day"; a criticism of grammatical terminology by Prof. Hale, of Chicago; "The Heritage of Unreason in Syntactical Method"; Miss Harrison on "The Pillar and the Maiden," discovering a pillar cult in the Cathedral of Chartres; Mr. Dawkins on Greek excavations; and Mr. Warde Fowler on "The Decay of Roman Home Life." These topics are too diverse to allow of proper discussion here; we may touch, however, on one or two points. What a shyness is here of reform in Greek pronunciation! Yet the language may be brought into line with Latin by very simple and easy changes, which have everything in their favour and no difficulty to set against them. The Curricula Committee, again, have done an important work which must have far-reaching effects. Some matters connected with their work have been discussed in these pages, and we shall hear more of them yet. In particular, it becomes clear that the demands of Latin on the school time are very moderate, and that those who know are hopeful that a good result may yet be attained. The papers named above are highly stimulating, whether we agree with them or not; Mr. Butcher's and Mr. Fowler's are also full of literary charm, and not without genial humour. The association is evidently doing good work, and deserves the support of all classical teachers and others who care for classical study.

Cicero in Catilinam, I.–IV. By J. F. Stowe. 154 pp. (Clive.) 2*s.* 6*d.*—A useful historical introduction heralds this new edition of the Catilines. The text is well printed, if rather small. The notes are of the character usual in this series. For school work they are unfitted: they give far too much help and too elementary; but they are suited to those who have to work by themselves for an examination such as the London Matriculation. Some of the notes are very good, pithy, and to the point (*e.g.*, i. i. 4, and i. ii. 23, where a hoary misrepresentation is corrected, and others). With liberal excisions, a satisfactory school book might be made of this.

Plutarch's Life of Julius Caesar in North's Translation. Edited, with Notes and Introduction, by R. H. Carr. xxxvi+76 pp. (Clarendon Press.) 1*s.* 6*d.*—This book deserves a hearty welcome for more than one reason. Plutarch's "Lives" are noble works, admirably adapted

to arouse the enthusiasm of the young; they had been an important part of the education of children for centuries until the nineteenth forgot them. North's translation had a profound influence on English thought and literature, being used, as all the world knows, by Shakespeare in several of his plays. The book, therefore, is an excellent English reader for schools, and the editor has greatly added to its usefulness by his introduction, which discusses, not only North, but the relations of the text to the plays of "Julius Caesar," "Antony and Cleopatra," and "Coriolanus." This introduction is reprinted from a larger edition, which includes the lives of Coriolanus, Caesar, Brutus, and Antonius.

Philosophy and Popular Morals in Ancient Greece. By A. E. Dobbs. xii+282 pp. (Simpkin, Marshall.) 3*s.* 6*d.*—This book is the Hare Prize Essay for 1906, which has been, as the writer tells us, rewritten. It contains a sketch of philosophic ethics occupying two-thirds of the book, and the rest is a discussion of the reflex influence of moral philosophy on popular thought and conduct. The proportion ought to have been reversed. Many scholars have discussed philosophic ethics, but the real morality of the people has been little discussed. Moreover, we want to know what this popular morality was as apart from philosophy. No doubt it is difficult to estimate this; perhaps it is impossible. The essay, however, contains a great deal that is interesting, and the numerous quotations are a good point.

Paralipomena Sophoclea. Supplementary Notes on the Text and Interpretation of Sophocles. By Lewis Campbell. xvi+288 pp. (Rivingtons.) 6*s.* net.—Prof. Campbell is a scholar, as all the world knows, of learning and originality; and if he is second to Jebb, yet he is often a useful critic of Jebb. It is inevitable that he should often be found in these pages differing from Jebb; if his views were to be only an echo of another's, there would be small need for the book; but he is careful to point out that it must not be assumed that he fails to see Jebb's great services to the interpretation of his author. Sometimes he gives reason to believe that he is right; and nearly always he makes out a case. His account of the accident to Orestes, for example, seems to us to be certainly right (*El.* 727, 743). Additional illustrations are often given, and all to the point; now and then he sees better a dramatic situation, but that is less often. We have no space to discuss the notes in detail, and it is difficult to select; but it is probably enough to indicate thus the general character of the book, and to add that, having kept it at hand in reading for some months, we are convinced of its value.

Aeschylus, Prometheus Bound. Translated by Robert Whitelaw. xlviii+54 pp. *Agamemnon.* Translated by John Conington. xlviii+74 pp. With Introductions and Notes by J. Churton Collins. (Clarendon Press.) 1*s.* each.—We have already reviewed others of this series, and expressed an opinion that they were overloaded with notes and introductions; these two are open to the same objection. We do not think this is the right way to make the Greek drama intelligible to the Greekless. This said, however, we offer a welcome to the reprint of Conington's translation, and to the appearance, we believe for the first time, of Whitelaw's "Prometheus." Conington's blank verse is agreeable, but his choruses are sometimes perilously near bathos, and they cannot give any idea of the original. Mr. Whitelaw is well known for his severe and dignified style, which is excellent in the dialogue, and even in the chorus can be read without offence, in spite of stiffness. But here, too, we miss the variety of the Greek. Perhaps no one can translate a Greek chorus; we are not saying this to find fault, only to guard against the belief that the extension student can read Aeschylus or anything like him in English.

A Greek Reader. By W. H. D. Rouse. 142 pp. (Blackie.) 2*s.* 6*d.* net.—Dr. Rouse has compiled a very good Greek reader intended for use as soon as the elementary grammar is learnt. The book is in four parts. Part i. contains forty-four verse passages, followed by forty prose extracts; the poetry is from works of Anacreon, Menander, and the Anthology, and the prose mainly dramatic narrative from Plato and the orators. Part ii. consists of 205 epigrams, most of them of only one or two lines, Menander being again largely drawn upon. Part iii., consisting of fifteen prose passages, is taken from Oribasius and Hippocrates; these are interesting as widening the range of the ordinary boy's reading, and as dealing with the everyday life of the Greeks. The book ends with a short collection of Proverbs and Riddles. The pieces are all complete in themselves, and, as can be seen from what has been said, lie many of them off the usual track of school reading. The great dramatists are not touched, nor Thucydides or the best known works of Demosthenes. Dr. Rouse explains that he has not included any extract from Herodotus, as his history should be read within the first two years of Greek; for a similar reason he says he has only included one short specimen of Lucian; but this is not strictly accurate, as by a curious oversight he has not apparently observed that extract 74 in part i.—the longest in the book—is from the end of Bk. I. and the beginning of Bk. II. of the "Vera Historia." The Greek Reader is well adapted for either prepared or unprepared work.

English.

Plays and Reading Books.—First and foremost come plays for children curiously alike in title. "The Queen's Jest and two other Playlets," by E. Fogerty, well known for more ambitious work on similar lines (Swan Sonnenschein, 62 pp., 6*d.*), are intended for girls' schools. We welcome anything in the way of children's plays: but surely, though the author makes it all clear and knows her stage well, these plays are too grown up. Moreover, though it sounds prudish, a Court intrigue or liaison should not be even hinted at. Must all plays for girls' schools contain amorousness? Perhaps they must. "The King's Jester," by Bessie Manning (Galt, 48 pp., 6*d.*), is wholly admirable and is pure comedy. It is a pity, though, that the author gives no stage directions or stage plot, and we miss the elaborate directions about dress contained in Miss Fogerty's loftier work. We hope the time is not far distant when those natural actors, children, shall have their little stages in their schools. The amazed inspector who laments the crowding of the curriculum might then throw over a good deal of grammar and written composition: perhaps, too, we should hear less of the impossibility of inculcating a real love for good literature. Such a love may well be cultivated by Mr. A. V. Houghton's "Shakespeare for Schools," an edition of twelve of the plays with a glossary (Longmans, 816 pp., 2*s.* 6*d.*), well printed and admirable in format. We hope that the expurgation, which is well done, will be a trifle more severe in a second edition; and we hope a second edition will be called for. More advanced work is provided for in Dr. Rouse's Plutarch ("Julius Caesar"), Malory, Ruskin ("Byzantine Churches of Venice"), Thucydides ("Siege of Syracuse"), Irving's "English Rural Life,"

and Cowley's "Essays," all in a series (Blackie's "English Texts," 6*d.* each) often praised in these columns. Younger children will delight in Mrs. Molesworth's books ("Rosy," "Two Little Waifs," "The Rectory Children," 2*s.* 6*d.* each), well bound and very attractive (Macmillan), and our old friend "Robinson Crusoe" comes to us in two forms (Longmans, "Class Books of English Literature," 1*s.* 4*d.*, and a larger edition, 2*s.* 6*d.*), both edited by Mr. P. W. Silverdale. In like form also comes "Gods and Heroes of the North," by Alice Zimmern (Longmans, 1*s.* and 2*s.*). We do not know that Scandinavian mythology takes a very great hold of children: but, as one would expect, these books are admirably written. We enter a protest, however, against Signy's full story being read by any child. An admirable edition of "Eothen" (1*s.*) is sent by Messrs. Blackie, and two small books (2*d.* each) are Tennyson's "Palace of Art" and "Dream of Fair Women," by the same publishers. To conclude, Messrs. Macmillan send the "Kipling Reader" (288 pp., 2*s.* 6*d.*), containing the "Rikki-tikki-tavi," "Mowgli's Brothers," "Tod's Amendment," and very many other favourites—a well-illustrated, fascinating book. Truly this is a most interesting bundle for the aspiring teacher.

The Nun's Priest's Tale. Edited by A. W. Pollard. (Macmillan.) 1*s.* 6*d.*—The editor's name is a sufficient guarantee for the soundness of the scholarship in this volume of Macmillan's "English Classics." We look forward to the time when, as a result of the new movement in the teaching of English, it will be as usual for the fifth and sixth forms of secondary schools—on modern as well as on classical sides—to read with pleasure and understanding the classical authors of their native country as it has been usual in the past for them to read with difficulty and listlessness the classical authors of Greece and Rome. For in our revolt against pedantry we must be all the more loyal to scholarship.

The Gleeman. Edited by Richard Wilson. (Nelson.) 1*s.* 6*d.*—This third volume of Messrs. Nelson's "Cameos of Literature" has interested us greatly. It is a collection of story-poems "of varied interest and of greater length than can be inserted in the ordinary school anthology of poetry." The contents include selections from "Chevy Chase," "The Ancient Mariner," Scott's "Flodden," "Horatius," "Sohrab and Rustum," Tennyson's "Morte d'Arthur," and Rossetti's "Goblin Market." There are a few "footnotes useful for a first reading," and a further short commentary at the end. It is maintained in an excellent introduction—not more than a page in length—that the child "who has learnt to love the story-poem will pass, later, to appreciation of the poem of sentiment or reflection and the lyric." With that opinion we agree, and heartily commend this book, its justification.

History.

The Story of Scotland for Junior Classes. By H. W. Meikle. viii+216 pp. (Oliver and Boyd.) 1*s.*—This book was written at Dr. Brown's request, who writes a preface. It consists of well-told stories, sometimes legendary, from the "coming of Scota" to the battle of Culloden, illustrated with an abundance of pictures. It will certainly convey to its readers a full idea of the meaning of the Scottish nation.

Outline of Scottish History. By W. M. Mackenzie. xiv+484 pp. (Black.) 2*s.* 6*d.*—Here we have a compact and accurate sketch of Scottish history from Roman times until the "Disruption" of 1843. It contains seventy-nine illustrations and twelve maps and plans, besides genealogical tables. The story is well told, and it would make a good class-book for pupils whether north or south of Tweed.

A History of Scotland for Schools. Part ii. By P. H. Brown. xv+287 pp. (Oliver and Boyd.) 1*s.* 6*d.*—This is a continuation of Prof. Brown's little book which we reviewed recently. It is well written, illustrated with pictures, and provided with a list of events. There are two or three points on which we should differ from the author. It is not quite correct to say (p. 127) that both parties agreed by the Solemn League and Covenant to set up Presbyterianism in England and Ireland, nor (p. 150) that Charles II. became King of Great Britain in 1660. We suppose it is a Scotticism to say (p. 106) that "Scotland would be the better *of* having Justices," but on p. 239 it is surely neither good Scots nor good English to say "a son *whom* the Jacobites thought would prove."

A Sketch of Scottish Industrial and Social History in the Eighteenth and Nineteenth Centuries. By A. H. Stirling. vii+213 pp. (Blackie.) 1*s.* 6*d.*—A cheap edition of a book which we reviewed last May. It is a useful "sketch" of Scottish history since the Union, a subject often neglected. The eight portraits are kept, but not the index.

The "Scottish" Historical Geography Book. By A. Macdonald. 26 pp. (Charles and Dible.) 3*d.* net.—On each left-hand page a summary of a period of Scottish history, on each right-hand page a boldly drawn map illustrating the same. A very useful book, which, with a good teacher, would obviate the need for any further class-book on the subject.

Geography.

A Rational Geography. Part ii. By Ernest Young. xvi+208 pp.; maps and diagrams. (Philip.) 1*s.* 6*d.*—The headmaster of the Lower School of John Lyon, Harrow, follows the same rationalistic lines of teaching geography in this second part of his new book as he laid down in his first. Much information is really imparted by question, and much by exercise. Indeed, the book is a sort of substitute for *oral* teaching, and no boys or girls can read it without being compelled to use their thinking powers at every stage. We can therefore commend it to teachers engaged in, say, the middle and higher junior forms of a grammar school. It is adapted to the four years' course sketched out by the Board of Education's "Suggestions," as well as to the ordinary Preliminary and Junior University Local examinations. The contents may be briefly epitomised as dealing with tides, winds, and currents, latitude and longitude, and the continents of America and Africa. We are glad to note that the author has modified to some extent his old-time dogma on the subject of the Gulf Stream.

The Elements of Geography. Part i. General Geography. By J. H. N. Stephenson. xiii+160 pp.; illustrations and maps. (Stanford.) 3*s.* 6*d.*—If we appraised the value of books after a certain well-known, though somewhat controverted, "business-like" method, we should be very unjust to Mr. Stephenson—224 pages of Mr. Young for 1*s.* 6*d.*, but only 173 of Mr. Stephenson for more than twice as much! A glance at the excellent (coloured) maps in the latter book at once explains the difference in price. But the work strikes us as rather "stiff." The very titles of sections are ominous: "Astronomical Geography, Inorganic Geography, Organic Geography, Cartography"

follow hard on the author's expressed opinion that the simplest possible language should be used. The ground covered, too, is exceedingly "general"; certain chapters would be more in place in books on nature-study, geology, and physiography than in a school geography. Still, good work can be done with a good teacher at hand to explain difficulties, and once more the maps are excellent! The chapters are followed by questions which partake more of examination questions than of the simpler exercises we are beginning to associate with the modern up-to-date geography. And speaking of up-to-dateness, we wonder why so well-informed a man as Mr. Stephenson should still harp on the Gulf Stream myth (p. 102). Let him read Mackinder's "Britain and the British Seas" and—alter his statements in a future edition of his own book.

Two New Sixpenny Atlases, Johnston's "Simplex" and Bacon's "Relief."—Two wonderful sixpennyworths! The "Simplex" contains forty-one maps and a cover of geographical terms and astronomical diagrams; enters into such details as "environ" maps of the British Isles; and is so much up-to-date as to show the Hejaz railway up to Tebuk—*i.e.*, nearly up to railhead at the present time, and much further than we have seen it in any other atlas. The "Relief," edited by M. G. Morrison, gives thirty-six maps, political and relief, as far as possible opposite each other. Its special features are reproduction of relief models without names, clear outline and bold lettering on political maps, insets of British Isles where possible, and a capital "equal-area" world to begin with. It, too, is up-to-date.

Mathematics.

The Tangentometer. Designed by Douglas Berridge. (Birmingham and Dublin: Philip Harris and Co.) 13*s.* 6*d.*—This instrument has been designed to help, in the first place, to give clear notions of the meaning of the trigonometric ratios, since the actual values of these ratios can be approximately obtained by means of it; it may also prove useful in the laboratory when approximate values of the ratios are wanted, the claim being made that with very little practice the error may be brought below a half per cent. by mere beginners. The specification of the instrument is as follows: one boxwood metre rule; a semicircle graduated in degrees; a half-metre boxwood rule perforated at various points, and with small slot to read degrees on semicircle; a third rule graduated in mms. with fine slot cut down centre; plumb bob and cursor; the whole fixed on firm base. The chief value of the instrument, it seems to us, will lie in the use that may be made of it for teaching purposes; a pupil can readily follow on it the variation of the different ratios, and by actually obtaining rough values of these will be more likely to acquire a good working knowledge of them. For actual calculations the use of tables should, we think, be learned at a very early stage, so that we do not lay so much stress on the value that the tangentometer may have as a substitute for tables; but we believe that at the beginning of the study of trigonometry, especially with comparatively young pupils, the instrument is capable of rendering very good service, as it is so simple in its construction that every pupil can understand and use it with very little in the way of explanation.

Solid Geometry through the Stereoscope. Demonstrations of some of the more important Propositions. Prepared by Edward M. Langley. Comprising text (43 pp.), accompanying 25 stereographs, complete in leatherette case. (Underwood and Underwood.) 12*s.* 6*d.*—We would very strongly recommend this equipment to the consideration of teachers. Solid geometry has not yet, in spite of its great importance, come to its own in the schools of this country, and the reason for this state of matters is to be ascribed in all probability to the difficulty that teachers as well as pupils experience in the plane representation of spatial figures. The stereographs of this set illustrate all the more important theorems of elementary solid geometry, and the slides may easily be used in connection with any of the current school texts, as the booklet indicates the pages in a large number of these text-books where the corresponding theorems are treated. In conjunction with models, but particularly where models are not at hand, this equipment will be a source of pleasure as well as a valuable means of instruction to the pupil. The stereoscope that accompanies the set of slides shows up the figures in bold, clear outline.

Preparatory Mathematics. A New Arithmetic for Junior Forms. By A. Clement Jones and C. H. Blomfield. 240 pp. (Nelson.) 1*s.* 6*d.*—According to the preface, the book is designed "to provide a complete course of mathematics for junior forms, preparatory to what has been usually called the first year. The work comprises the less complicated parts of arithmetic, symbolic notation extended to the solution of algebraical simple equations, and an introduction to the fundamental ideas of geometrical forms." The character of the book would have been indicated more clearly had it been entitled a collection of examples, as no book-work discussing the nature of the processes involved is provided, it being considered "wise to leave teaching to the teacher." For the teacher there is a short syllabus, with occasional suggestions. The general arrangement of the work is that which is now being accepted as most suitable, and there is ample material for an instructive course in arithmetic. Many pages are dotted over with asterisks to indicate places where the numbers and units may be supplied or varied by the teacher; to our eyes the appearance of the page is not improved, while we think the teacher might be left to exercise his own discretion without these reminders.

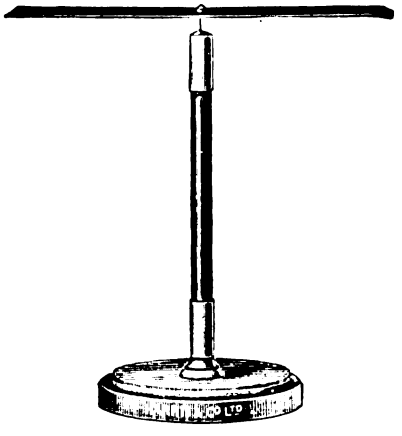
The Metric and British Systems of Weights, Measures and Coinage. By F. Mollwo Perkin. 83 pp. (Whittaker.) 1*s.* 6*d.* net.—To people engaged in teaching or in scientific research, even to many business men who appreciate the practical inconveniences which a change from our system of weights and measures would inflict on the commercial community during the transition, it is unintelligible why the obvious advantages of the metric system fail to impress the British people as a whole. Meanwhile, the advocates of the change must do their utmost to educate the rising generation in the hope that fuller knowledge will issue in Parliamentary action. The process of education will be helped by a study of the book under notice; the account given in it is expressed in the simplest language and illustrated by suitable diagrams, so that it may be easily read and mastered by anyone who has a fair knowledge of common arithmetic, whether he is still at school or college or has entered on a business life.

Science and Technology.

THE degree of success of the school lesson which involves drawing, in any shape or form, depends very largely on the choice of a pencil. Especially is this the case in relation to mathematical and geometrical diagrams, the very essence of which lies in their absolute accuracy; a boy who is equipped with an inferior pencil, whether through indifference or from motives of economy, will

surely turn out inferior work. The merits of the *Koh-i-noor* pencils, which are made by Messrs. Hardtmuth in fourteen degrees of hardness, are almost too well known to need further commendation; with reference, however, to the selection of a pencil especially suited for school work, we can state with confidence, after extensive practical experiment, that the *Koh-i-noor*, in one or another of its various degrees, fulfils admirably all the conditions required in a school pencil. For mechanical and mathematical drawing, demanding a fine yet definite line, and consequently a hard pencil not too brittle to take a sharp chisel point, there is a sufficient range from 1 H. to 7 H. to satisfy all requirements; whilst for the other branches of drawing the scale ranges through seven degrees of softness. The *Koh-i-noor* has the reputation of being an expensive pencil compared with many others on the market, but it has been frequently demonstrated that, by reason of its durability and trustworthiness, as well as of the satisfactory results obtained, it is infinitely cheaper in the long run than the lower-priced inferior article.

A Simple Electroscope.—The simple electroscope represented in the figure has been found useful in testing the electrical condition of bodies, for, without the use of drying agents, it is always in good order on days at all suitable for experiments in electrostatics; and it is sensitive, its indications being, at the same time, marked, and capable of being followed by all the members of a large class. One end of the "needle," which is of ebonite, may be charged by means of thin leather to which electrical



amalgam has been applied, and the other end, by rubbing with flannel. As ebonite is acted upon slowly by light, the "needle," when not in use, should be wrapped in paper, and when, after long exposure to light, it is not electrified easily, it can be put into order in a few minutes by scraping off the surface with a penknife, or by means of emery cloth, and again polishing it with any metal polish. The instrument is supplied by Messrs. P. Harris and Co., 144, Edmund Street, Birmingham, at 2*s.* 6*d.* or 3*s.* 6*d.*

School Hygiene. By Robt. A. Lyster. 353 pp.; illustrated. (University Tutorial Press.) 3*s.* 6*d.*—Dr. Lyster holds that if medical inspection is to have its full beneficial effects, all teachers must be sufficiently trained in practical hygiene to be able to co-operate with the medical officer of the school. There is no doubt that any teacher who had assimilated the instruction given in this clearly written and handy volume would be well equipped for carrying out such duties. He should also be able to instruct his pupils in the essentials of hygiene after a fashion such as would tend to remove the reproach which has hitherto attended the teaching of this subject in schools, for the most part, viz., that "it appears to have produced little or no result." This disappointing outcome of well-intentioned energy the author attributes to three main factors: the lessons have been directed more to explaining reasons for, rather than to laying down the rules of, a healthy life; few of the teachers have had efficient training in the subject; and the lack of proper ventilation and of cleanliness, &c., obtaining in most schools have neutralised the effect of such teaching as has been given. This indictment may not be universally applicable in its entirety, and there are already visible many signs of awakening and improvement; but very much yet remains to be achieved before such criticism can be regarded as being, on the whole, unjust or undeserved. When teachers know as much as this book can teach them, and when all schools are so managed and equipped as to permit of its precepts being intelligently taught and illustrated within their walls, the children of this country will be a happier, a healthier, and a more virile race. The book is in every sense pleasant to read, and is furnished with a good index.

Notes of Lessons on Hygiene and Temperance. By Mrs. Ellis H. Chadwick. Vol. i. 182 pp.; illustrated. (Pitman.) 3*s.*—This volume consists of three parts, dealing with the person, eating and drinking, and clothes, respectively, and there is in it so much of good that one wishes it were better. Each part comprises a series of lessons (there are forty-five in all), and each lesson consists of a number of "heads" with a synopsis of the information to be given, and brief details of the experiments by which this may be illustrated, arranged in three parallel columns; and each part is followed by a series of questions by which the extent and character of the information which has been acquired by the pupils may be tested. The scheme is a good one, but the manner in which it has been carried out leaves something to be desired. The book is avowedly based upon the scheme suggested by the Board of Education for teaching hygiene and temperance in public elementary schools, and it bears internal evidence of having been hurriedly compiled to this end. The diction is at times involved, and some of the statements made are obscure, and even untrue, simply because they are ungrammatically phrased. There are two coloured plates representing sections of the skin; one, according to the letterpress, shows, amongst other things, "touch papillæ," the other, on the same authority, a "touch papillus" (*sic*). This recalls the exploits of the lady who, a few years ago, used to contribute a bi-weekly column of "Popular Science Notes" to the pages of a well-known morning paper, and revelled in describing the iniquities of certain mysterious entities which invariably figured as "bacteriæ." On p. 178 it is pointed out that "salts of lemon is a strong poison," but on two occasions, for the removal of stains, it is advised to "apply a little common salt and lemon juice, or salts of lemon," without any attempt to correct the very natural inference by the uninstructed reader that "common salt and lemon juice" *is* "salts of lemon," or to inform him that the latter is the deadly oxalate of potash, and has nothing to do with a valuable and wholesome fruit. The "temperance" teaching is refreshingly unobtrusive—the sound, common-sense doctrine of "moderation in all things"; "temperance" is distinguished from "total abstinence," and it is pointed out that "tea and coffee are stimulants." With some recasting and rewriting the book might really deserve the

epithet of "an admirable text-book," which is ascribed to it in the introduction furnished by Prof. Sims Woodhead.

Pedagogy.

The Child's Mind: its Growth and Training. By W. E. Urwick. 269 pp. (Edward Arnold.) 4*s.* 6*d.* net.—The theory of education has hitherto been mainly "dependent upon the philosophic systems of Herbart or Froebel, both of whom preceded the scientific developments of the nineteenth century." But the sciences upon which the educational theory is based—those of biology, physiology, psychology—are not only continuously progressive, but have undergone enormous development within the last hundred years. Mr. Urwick claims that it is high time that the science of education, if such a thing there be, should no longer be presented in the form of an analysis of Herbart or Froebel's systems, or as merely embracing a body of principles included therein, which are taken for granted, but neither defended nor explained, but that it should be revised in the light of modern scientific knowledge. To this end he adopts the genetic method, which deals with the process of growth, and has borne such fruitful results in its applications to those sciences most closely connected with modern ideas on education. He recognises that such revision must be the work, not of one investigator, but of many, spread over a considerable number of years: that for its completion there will be needed an illumination of areas as yet unexplored, a harmonising of results apparently conflicting, and a fuller interpretation of difficulties on which associated sciences throw at present only doubtful sidelights. He aims at setting forth results already obtained from a study of mind-growth as an organic process, and seeks to establish a clear and definite connection between the natural processes of learning and the methods by which the child's mind should be taught and trained. The result is a book of real interest and great suggestiveness. As free as possible from technicalities of language, not confined to the lines of any philosophical system, and avoiding, as far as is possible, hypotheses still disputed, it links up the facts of mind-growth and of the circumstances which condition it in a manner which cannot fail to be of use to all who profess to be trainers of the mind, demonstrating their practical application to educational methods with aptness and lucidity. It is a book which requires and deserves careful study.

Art.

Design for Schools. A Handbook for Teachers. By Charles Holland. 177 pp. + cxxi plates. (Macmillan.) 6*s.* net.—Mr. Holland describes his book as "an attempt to organise and illustrate a course of elementary design based on brush-drawing and correlated to nature-study suitable for use in secondary and elementary schools," and, so far as a subject of a nature so complex and comprehensive can be rendered subservient to the unavoidable limitations and conditions imposed by its introduction as a class subject for schools, it must be at once granted that the attempt has been remarkably successful. The object of the book being to smooth the path for the teacher who is not also a designer, it is perhaps inevitable that, in the process of "cutting and drying" the laws and canons of the art of designing, they should have developed a suggestion of arbitrariness and a tendency to labour the obvious. The plan of the book is excellent: a few preliminary chapters dealing with methods, materials, ideals and principles, are followed by a detailed scheme of work in the form of specimen lessons intended to cover four courses of twelve lessons each, with exhaustive directions and copious illustrations. Among the early chapters, that dealing with the laws of plant growth is an extremely valuable one; all the salient features are dwelt upon briefly and clearly, and their bearing on design is exemplified in a striking and convincing manner. It may be safely asserted that the teacher who essays to teach design in an elementary or a secondary school will find in this book a wealth of suggestion and inspiration, backed up by an abundance of illustration, which, if not always representing the "best" in ornamental art, is at any rate based on sound academic lines, and may be relied on to "tend to raise the general standard of appreciation for the art, and consequently the standard of work."

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.***

Chemistry as a School Subject.

PROF. COHEN'S article and the subsequent letters on this subject are alike interesting in that they all ignore the causes of the evils we severally deplore. It is no good railing at the masters in schools as a body for the ineffectiveness of natural science teaching when the causes are beyond their control. Their livelihood—which, after all, is worthy of some measure of their consideration—is dependent on their examination results. It is not the experience of most masters that earnest teachers who fail to achieve examination results are likely to obtain either a headship—one goal of their ambition—or to be retained permanently in their situations.

The examinations, again, are conducted, not always by schoolmasters, but by persons of university authority who seem to have been so far singularly oblivious of the facts of life in regard to what the growing boy may be expected to do and what he may not. They seem to ignore the fact that while a man of three-and-twenty years of age taking up chemistry might perhaps make more rapid progress by a careful study of the philosophy of it, a schoolboy has not developed much reflective power yet, and that for him the best introduction to it is on the qualitative side when that springs naturally out of qualitative heat experiments: that his work should consist of a series of consequent experiments, and only inferences of the most obvious order should be expected from him.

Many university authorities and others seem to be—judging from examination papers and syllabuses—under the delusion that, because a boy can repeat certain work set him and do a certain stereotyped order of riders on it, he necessarily understands what he is doing, whereas a few unconventional questions would show that a parrot-like faculty was all that had been developed, a development that really means the imposition of fetters on the healthy growth of the mind.

Atoms and molecules to an average lower sixth form mind—the pity of it! How many of those boys who will glibly write equations and discuss them this summer will for one moment realise that an equation is an epitome of experience, and will not be tempted to think a reaction follows a certain course "because the equation says so"? Yet have I heard of a don who recommended teaching equations to a third form.

To me the real justification of a course of chemistry lies in the fact that it gives the growing mind an opportunity of exercising and developing its powers by the study of phenomena of an order different from those of language and number, while, like the other natural sciences, it teaches suspension of judgment and devotion to truth.

ARNOLD MERRICK.

Lower School of Lawrence Sherriffe, Rugby.

Geometrical Progressions to Infinity.

I was much interested in the geometrical illustrations given by Mr. Crawford in his "Notes on Geometrical Progressions to Infinity" in the March issue of THE SCHOOL WORLD. The theoretical treatment, however, seems to me hardly suitable for the provision of an "excellent, if somewhat severe, mental discipline." A student (probably young, since the article appears to refer to secondary schools) who has hitherto dealt only with finite chains of operations is suddenly confronted with the question: Has the series so and so a sum to infinity or not? No hint is given by Mr. Crawford as to how he introduces the word infinity, but it would appear from the rest of the article that he is using a metaphysical infinity of which his students are supposed to possess intuitional knowledge.

Personally, I have found that young students can follow me when they are told: (1) that mathematics deals *only* with finite chains of operations; (2) that if we write down the expressions

$$1$$

$$1+\frac{1}{2} \text{ or } 2-\frac{1}{2}$$

$$1+\frac{1}{2}+\frac{1}{4} \text{ or } 2-\frac{1}{2^2}$$

. . . . . .

$$*1+\frac{1}{2}+\frac{1}{4}+\ldots+\frac{1}{2^{n-1}} \text{ or } 2-\frac{1}{2^{n-1}}$$

we can make about them the precise, although awkward, statement "that corresponding to any number x not zero, however small, a value of m can be found such that the mth and all following expressions differ from 2 by less than x." The series $1+\frac{1}{2}+\frac{1}{4}+\frac{1}{8}+\ldots$, in which each term can be written down by a definite rule, is in virtue of the above said to converge to the sum 2.

The more difficult cases of series of the type

$$1-\tfrac{1}{2}+\tfrac{1}{3}-\tfrac{1}{4}+\ldots,$$

where the sum of a finite number of terms does not admit of simple expression (the series being one which defines a real but not a rational number), must, of course, be omitted by elementary students.

Mr. Crawford says on p. 89: "the sum to n terms is not nearly so useful as, and more ungainly than, the sum to infinity," and then proceeds to *deduce* the sum to n terms by the equation $\sum_{1}^{n} = \sum_{1}^{\infty} - \sum_{n+1}^{\infty}$. The sum to n terms may be ungainly, but it is *the only thing we can deal with*, and I very much question the severe mental discipline derivable from this method of summing a finite number of terms.

May I add that, after I have explained to my students the convergency of a G.P. in certain circumstances, I add for *examination* purposes the statement: "The sum 2 to which the series $1+\frac{1}{2}+\frac{1}{4}+\frac{1}{8}+\ldots$ converges is called by some people the sum to infinity"?

L. ISSERLIS.

Technical Institute, West Ham.

* Note that an acquaintance with the sum of a finite number of terms of a G.P. is assumed.

Flowers for City Schools.

SOME years ago, a manager of an elementary school in a squalid neighbourhood of Liverpool was struck by the fact that the children attending this school could have little real knowledge of natural objects, because they so rarely had any first-hand experience of them. It seemed as if the boys and girls who, through the agency of the Country Holiday Fund, were annually benefited by their three weeks' stay in the country, missed something of the æsthetic and educational value the visit might have proved had they been better prepared. Therefore, when an opportunity arose to encourage nature teaching in our elementary schools by obtaining for the teachers the fresh material for illustration which they had been unable to get, this manager and others were eager to take the matter up.

Working on the lines of the London Flower Fund, the Liverpool Kyrle Society seven years ago started a branch to organise the distribution of flowers, leaves, ferns, mosses, &c., to the city schools. This venture met with the hearty support of a few sympathisers in the country, and from a small band of workers we have now increased to a fair number of regular contributors. Fully as we appreciate the fact that this bringing of "bits of nature" into the schoolroom can never take the place of the sense experience which contact with the out-of-door world would bring, we still have a deep sense of the humanising effect of the study of freshly gathered material.

The boxes of plants are sent to the council, voluntary, "special," and industrial schools. The flowers are greatly valued for the sake of their beauty, and much pride is taken by the children in arranging them to the best advantage. They are also used for botany lessons, as models for painting and clay-work, and as a basis for conversation classes. The flowers are sometimes given to the children, who treasure them at home for many days afterwards. We can hardly estimate the value of the work this branch is doing among children to whom all blue flowers are bluebells and all yellow flowers are buttercups.

The country workers are in all parts of the British Isles, and they send regular supplies to their particular schools. There are still more workers wanted; at least a dozen schools are patiently waiting until some kind friend will undertake to forward plants, &c., to them (in boxes). The work is suitable for boys and girls, for they would not only be giving pleasure to less favoured children, but it would also be of profit to themselves. The secretary, Miss Jessie Bird, Riversdale Road, Aigburth, Liverpool, will be glad to give any further particulars, and also to receive the names of any willing to become members.

J. L. M. B. and A. S. K.

The School World.

A Monthly Magazine of Educational Work and Progress.

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The School World

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DEVOLUTION IN EDUCATIONAL ADMINISTRATION.

By A COUNTY SECRETARY FOR EDUCATION.

IN consequence of the deplorable controversies of the last few years, the Education Act of 1902 has come to be regarded as mainly an Act for the relief of voluntary schools. Mr. Balfour dared to put the voluntary schools on the rates, and everyone who was practically acquainted with the condition of those schools prior to the passing of the Act will agree that in doing so he performed a great service to the cause of national education. But there are at least three other aspects of that Act which are of the greatest importance. In the first place, it was a long step toward the concentration of the financial responsibility for all public local services in the hands of one popularly elected authority. In the second place, it asserted the principle of the unity of education, although by the setting up of the larger urban districts and the municipal boroughs as independent authorities for elementary education a serious breach was made in the principle which must, one way or other, be healed in the future. And, thirdly, by bringing all education within the purview of the town and county councils, it gave promise of the re-establishment of that balance between the central and the local authority which is the distinguishing feature of English local government, but which was being rapidly destroyed owing to the keener realisation by the central government of the national need on one hand, and on the other hand to the isolated position of the school boards and to the very unequal and partial influence which they wielded.

The large school boards, especially in the manufacturing towns of the North, did splendid educational work in their day, but there were school boards and school boards, and most of them controlled only one or two small schools apiece, which were served by a beggarly corporal's guard of teachers. There were thus no possibilities in them of educational organisation with a wider reach than the single school possessed. Moreover, the boards themselves were scattered, and the interstices were filled in by the veriest simulacrum of an authority, the attendance committee. Further, the political tradition under which their constitution was settled had spent its force in two generations; the Local Government Act of 1888 had centred local interest in the county councils, and sounded the knell of all *ad hoc* authorities.

On the other hand, the technical education committees of the councils had almost reached the limit of their usefulness. They owed their existence to a scare and their funds to an accident, and their ten years' history had convinced the administrators that German industrial aggression was not to be defeated by occasional lectures on cabbage-planting or even by demonstrations of scientific butter-making. The fact was, and is, that technical instruction regarded in and by itself is as narrow and infertile a field as ever fell to the lot of the educational labourer.

But the technical instruction committees between them covered the ground: they had at their back the local parliaments, the county councils; they were sufficiently equal in standing and influence to be trusted with uniform powers and duties by the central authority; their areas were large enough to be treated as units for the purposes of all education, with the possible exception of university education. It followed, then, on the acceptance of two leading ideas and on the effort to give them effect that the town and county councils inevitably became the new local authorities. Of these ideas the first is that the word education does not cover a group of separate activities dovetailing into one another like the pieces of a puzzle map, but is rather a function of the social economy, every part of which is in vital relation to every other; and the second and complementary idea is that the modern nation requires of its members many services which elementary education alone will not enable them to perform, and must therefore take steps to fit them for those services.

It is worth recalling that as long ago as 1861 the county area was suggested by one of the Royal Commissions as a suitable administrative area for the purposes of elementary education, while the Taunton Commission Report of 1867 on the Endowed School contained a similar suggestion as regards secondary education.

In politics, however, as Lord Morley said once, the course of action adopted does not present itself as the best amid alternatives, but only as

the least harmful. There can be no doubt that on the balance the supersession of the school boards was justified, was even necessary. Yet the disadvantages, especially in the counties, are serious enough to call for mitigation if that be possible. Large numbers of men and women who, as members of school boards, brought personal interest and experience to bear on educational problems, have ceased to take any part in administration. Membership of the county council makes onerous demands on the time and on the pocket of the members, and consequently the management of county affairs is almost exclusively the privilege of a single class—"a *de facto* monopoly of wealth and position has been substituted for a constitutional privilege." Moreover, although the county council is a local body popularly elected, yet the areas are often very extensive, and the elections turn on other matters besides education. Finally, in view of the constant increase in the duties which are being cast upon the councils, their constitutional position must sooner or later be reconsidered.

The framers of the Local Government Act of 1894 clearly had in mind a kind of local administrative hierarchy, each body subordinate to the one above it—to name them in ascending order, the parish, the district, urban or rural, the administrative county, or the county borough. Unfortunately, very little has been done to fill out the skeleton of that Act, partly, no doubt, because the statutory services which have been created of late years have been regarded as too important to be entrusted to minor local bodies; but also it is to be feared because the apportionment of a complex of duties between the inferior and superior bodies is a task demanding a patience and skill which are unattainable in the legislative hurry of the present day.

But the fact remains that on overburdened public bodies, as the county councils are rapidly becoming, the elected members lose their way "amid the briars of an infinite detail"; if the machine is not to stop more and more must be left to the officials, and in the end bureaucracy usurps the place of popular control. That this should happen in educational affairs at this juncture would be nothing short of a disaster. What most of all is needed in England now is a raising of the levels of general opinion on the subject of education. We have no lack of leaders who understand that our destiny depends upon the work done in our schools, who realise how ill that work is being done by comparison with the efforts our rivals are putting forth, who see that improvement is a matter of life and death to the nation. But the people at large are far from grasping the urgency of the case, and an administrative system which tends to leave the common man under the impression that he has neither interest nor concern in the business, or rather is merely interested as a ratepayer in keeping down expenditure, may be efficient on the lower level, but will fail where success can alone be of lasting value.

What, then, is immediately necessary is a careful reconsideration of the tangle of powers and duties which at present pertain wholly to the county councils. The task will be one of great intricacy, but ultimately it should be possible to establish a broad distinction between matters of principle and matters of detail. The former should remain in the hands of the county councils. The latter may well be left to minor local authorities acting under the direction of the county councils. It is not the purpose of this article to pass beyond questions of principle to a detailed discussion either of the constitution of the minor local authorities on whom the lesser duties should devolve or of the precise nature of the duties they should perform. These are matters which should be left to the county councils to settle, and the record of work in this direction contained in the Consultative Committee's Report on Devolution shows conclusively that, given some slight extension of powers, particularly in regard to finance, the councils are quite competent to settle them.

There are, however, one or two things that remain to be said. First of all, there must be no derogation of the present powers of the councils; rather there must be an extension of them. By reason of the gradually increasing grants at its disposal, and by reason also of its increasing concern to obtain a high standard of education, the Board of Education has encroached more and more upon the functions of the local bodies. Had it not been for the Act of 1902, we should probably ere now have had an educational system guided and controlled entirely from Whitehall, and even yet the issue of central or local control is by no means decided. Indeed, it may be said that the local authorities are often blamed for vagaries of the central government for which they are no more responsible than a booking clerk is for a railway accident. The ideal to be realised is that of a proper balance between central initiative and the local idiosyncrasies. If devolution means that the county councils are to be weakened by rear attacks from unsympathetic minor authorities, it will not be long before the word becomes empty of all meaning; the councils will have no power or duty worth devolving.

In the next place, nothing should be done which will interfere with those improvements which the Act of 1902 alone rendered possible. The present system of educating future teachers could never have been set up in the days of the school boards. As are the teachers so are the scholars, and no more important work is being done for the future of education than the work of the councils in seeing that every would-be teacher shall learn something of the possibilities of higher education for its own sake, while the mind is yet plastic and before it has taken the professional bent. Again, instruction in the so-called "special subjects" of cookery, handicraft, gardening, and household economy has taken an immense leap forward in county areas since 1902.

The rural school board could not employ skilled teachers of these subjects for the simple reason that in a small area such a teacher's time could not be fully occupied. With the county as a unit, however, it has been found possible so to organise the work that facilities for learning one or other of these subjects may be brought within reach of even thinly populated districts at a moderate cost. Neither must the higher standard of school buildings and equipment which has been set by the councils be reduced. The politicians have expended much breath on the inadequate premises and incomplete equipment of the typical non-provided school, yet, truth to tell, the typical rural provided school was in quite as poor a case.

The fact is that the Act of 1902, where it has been generously administered, has, for the first time, brought to the country child educational opportunities if not equal to, at least commensurate with, those enjoyed by his town cousin.

Devolution, then, must not be made a pretext for a slackening of effort. It will undoubtedly mean an increase in the cost of administration, which we must hope to find compensated in a quickened local interest. But the skill and the prestige of the county councils must still remain attached to the cause of education. The more highly organised services must remain in their hands, and sufficient driving power must be granted to them to ensure that the subordinate authorities maintain a decent level of performance in the duties devolved.

A UNIFIED CURRICULUM OF PRIMARY INSTRUCTION.

SUITABLE FOR ALL BOYS AND GIRLS UP TO THE AGE OF THIRTEEN OR FOURTEEN.

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

IN this country, which, in spite of the fairly advanced character of its political institutions, remains the most undemocratic in the world, so far as social sentiment is concerned, it has come to be accepted almost as an axiom that there are two kinds of primary instruction—one for the poor and another for the well-to-do. The antithesis is not often, of course, stated so baldly; it is generally expressed in terms of the age to which the pupils continue their school education. The elementary schools are in the main provided for those who will leave as soon as the law allows them—that is, not later than their thirteenth or fourteenth year; whereas preparatory schools or departments, while they virtually cover the same period, are intended for those who will continue their school education beyond this point. In a broad sense, the terms *elementary* and *preparatory* describe two types of primary instruction, one of them supposed to be adapted to the needs of the less fortunate children who are passed into industrial occupations before their adolescence is complete, and the other supposed to serve the ends of the more fortunate class who can afford to wait for a more natural term before beginning the serious work of life. I will venture to suggest that, as they are at present organised, neither of these types is well adjusted to its professed purpose, and further that if each were reformed so as to serve better the true interests of those to whom it is applied, it would be found, in the first place, that the tendency in each case would be towards a more liberal ideal, and in the second place, that the divergence between them would practically disappear. In short, I believe that a primary curriculum could be found which, alike in its contents and in its methods of treatment, would be not only *equally* suitable, but the *most* suitable for all children up to the age of thirteen or fourteen at least.

Even if this approach to common ground could only be secured by a compromise in which each type had to surrender something that was of value, there would be a great gain to set against the loss. It would be well worth while to make some sacrifice of direct utility in order to reach a unified curriculum that would at once remove one of the most serious difficulties in establishing the educational ladder, put an end to one of the most objectionable class distinctions, and escape the political injustice of taxing the whole community for facilities that can be enjoyed only by the few. But there is good reason for holding that these manifest advantages could be gained without any sacrifice at all—nay, even that they would be accompanied by the great additional advantage of a higher type of primary education than has hitherto been devised. My contention is that the ideal curriculum up to the age of thirteen or fourteen is far removed from either of the existing types, though it is to be sought in directions towards which both have recently been moving with slow and uncertain steps. Before this curriculum is outlined more definitely, a word must be said as to the aims of our elementary and preparatory education respectively, and the success or failure which they meet with. In both cases credit must be given for liberal intentions. The elementary code is ostensibly framed to give the best general education that is possible in the circumstances, and its provisions have hitherto been supported by the mass of public opinion. Similarly, the accepted preparatory studies for boys form an essential part of the public-school curriculum, which is considered by its upholders to be the embodiment of a purely liberal training. But there is a growing feeling in the community that neither of these pretensions is justified. The generous purpose has been distorted in its execution, in the former case by a narrow and short-sighted conception of utility, and in the latter by conventional prejudice. It is impossible, of course, to make these criticisms good within the limits of this article, and their justice must to some extent be assumed. It will be enough to indicate some of the more serious perversions.

The elementary school, in its anxiety to supply as full an equipment as the limited time permits, is tempted to concentrate attention on the mechani-

cal acquirements that seem indispensable, and has recourse to methods which are apt to defeat the object in view. Competence in the "three R's" is regarded as an end in itself, or at least as a means only to industrial efficiency, and the educational achievements to which they should be merely instrumental and preliminary are pursued in a half-hearted and blundering fashion. The art of spelling, which should for the most part be acquired naturally and unconsciously through abundant reading, is treated as a feat of memory, and the premature enforcement of a pedantic standard of accuracy is the cause of much loss of time and energy and pleasure. The art of expression in the mother-tongue, which should come mainly through constant practice in oral and written composition, is taught too much through the ill-chosen medium of grammatical rules and analytical exercises. Arithmetic, which should form an introduction to scientific reasoning, is often little more than the unintelligent memorising of formulas. History and geography, which should open up new worlds that would form a boundless source of interest to the child, lose all their glamour and stimulus by being treated as purely informational subjects—mere records of barren facts, or of events that lie outside the scope of youthful learners. Such are the ill-advised preoccupations that stand in the way of a reasonable curriculum for the elementary scholar.

The same misguided apportionment of time and choice of methods are too much in evidence in the schools that avowedly prepare their pupils for a secondary course, but from the age of nine or ten the boy in the preparatory school or department labours under a further disadvantage that dwarfs all the others. Under the double assumption that no boy can be considered to have had a really liberal education without some knowledge of the classical languages, and that the requisite standard in these cannot be reached unless Latin, at least, is studied for some years before the age of fourteen, the preparatory curriculum for boys, under the pressure of traditions and regulations that filter downwards from the ancient universities, is so largely filled up with lessons in Latin and Greek that all other competing studies have to be crowded into a space too narrow to allow of justice being done to any of them. For the present purpose there is no need to trench upon the larger question as to whether, apart from the artificial requirements of the universities, a knowledge of the classical tongues is a necessary constituent of a liberal education; it will be enough if it can be shown that, without prejudice to the current tradition, there is reason for at least postponing all study of Latin and Greek until the fourteenth year. If this intrusion into the sphere of primary instruction were successfully repelled, there would be some hope of devising a curriculum that should make the most of these early years, whatever the sequel was to be.

It is clear, then, that a unified course of study, applicable to all children under fourteen, can be secured only by abolishing, or at least delaying, certain subjects altogether, by rearranging the time given to those that are left, and by introducing or extending reforms in the methods of teaching. Some suggestions must now be offered as to the general nature of this curriculum which it is proposed to substitute for those now current. To bring the discussion within practicable limits, only the years from ten to fourteen will be considered, and no attempt will be made to enter into details as to the exact apportionment of the time.

The study of the mother-tongue and its literature would, of course, bulk pretty largely, occupying certainly not less than a fifth of the whole available time, but this would include the history lessons, which at the primary stage ought to be treated mainly from a literary point of view. Some schools already give as much attention to English subjects, and many others come as near it as the pressure of competing studies will permit. Indeed, the suggested allowance of time is generally exceeded during the earlier part of the period named, but this too often means an undue preoccupation with spelling and grammar. The proportion of time I have proposed should be enough throughout the period, if it is used to the best advantage. As has been said, it should be chiefly occupied with reading and composition, and much care ought to be given to cultivating the art of elocution. Another fifth would be occupied with geography, nature-study, and similar scientific lessons, including practical work. Elementary mathematics, including arithmetic, would occupy a little less than this amount, French about the same, and the remainder of the time, equal to nearly a fourth of the whole, would be left for drawing, singing, physical exercises, and some form of manual training—perhaps woodwork for the boys and needlework for the girls. It is assumed that there will be a good deal of correlation among the different studies, composition and drawing especially being practised in connection with several of the subjects.

Now it will scarcely be denied that the curriculum just sketched might, with capable teaching, be made to afford a good basis of general education up to the age of fourteen, whether it were to be followed by the superstructure of a secondary course, or to form the sole systematic preparation for life. It will be objected, however, that in certain respects it fails to do the utmost possible both for the elementary scholar and for the prospective secondary scholar. Adverse criticism will probably bear chiefly on two points. It will be said that the boy who is to take a secondary-school course must have a fair amount of Latin, if not Greek, before he is fourteen, and as French also is necessary, the time must come off the English, science, or drawing lessons. The second objection will be that the elementary scholar who is going to leave school altogether at thirteen or fourteen has no need for French, and that his time could be better employed by giving him an extra allowance of bread-and-butter subjects. I must offer a short defence of the unified curriculum in regard to those two heads.

It has already been said that the postponement of the study of the classical languages until the age of fourteen does not imply that any lower standard of proficiency at the end of the full secondary-school course is to be accepted than that which is now maintained. Those who demur to this can only be referred to the experience of the "Reform Schools" in Germany, where it has been found, as might have been anticipated, that pupils whose language study during the primary period has been concentrated on a modern foreign tongue, are at the age of eighteen or nineteen quite able to hold their own in Latin and Greek with those who have been brought up on the old system, while they have found time for other acquirements as well that would have been unattainable but for this postponement. In the study of a dead language, one hour at the age of fifteen or sixteen is worth several at the age of eleven or twelve, while there are other subjects, such as observational science or a modern foreign language, where the position is almost reversed. Surely the only true economy lies in concentrating upon each study during the period of mental growth when progress in it is best assured.

Those who would deny a knowledge of French to those whose schooling is to end at the age of thirteen or fourteen may be influenced by various reasons—some of them, perhaps, not very creditable; but it may be charitably assumed that the chief ground of objection is that the average elementary scholar is not likely to enter any walk of life where the knowledge of a foreign language would be turned to profitable account, and that a better use might be made of the scanty opportunities that are available. This criticism is in keeping with the old notion that a knowledge of French is merely an elegant accomplishment, and with the belief, long justified by the meagre results, that no more than a smattering of it can be picked up at school. Improved methods of teaching have changed all that. It has been proved, not only that a serviceable command of a modern foreign language can be acquired by three or four years' concentrated application, but further that the study can be made the means of a genuine mental discipline. There is ample justification for a universal study of French in the truth of the saying that he who knows no other language than his own does not know even that. As for its ulterior uses, it is surely worth considering how valuable a factor in the promotion of international amity would be afforded by a general familiarity on the part of the people of this country with the language of the Continental neighbours from whom they have most to learn.

Two further criticisms may be anticipated. Some may object to the proposed curriculum merely on account of its uniformity. It will be urged that primary education would become stereotyped, and all freedom and initiative would be lost. To this I would reply that at least the danger would be no greater than it is at present. The existing divergences are not maintained for the sake of variety; it has been suggested that they are due to arbitrary and conventional notions of what is befitting. An approach to common ground as to the subjects to be taught and the general apportionment of the time need in no way interfere with experiments that are instituted on purely educational grounds. Others will object that no provision is made for early specialisation on the part of children who show decided talent for particular pursuits. The reply must be that during the primary course such specialisation is to be deprecated, if it means a reduction of the time that should be devoted to the essential elements of a liberal training. In the interests of a well-balanced development it is of the highest importance that talented scholars should not be prematurely withdrawn from the studies for which they show comparatively little aptitude. But it does not follow that they are to be kept marking time in their own special subjects while the duller pupils are working up to a medium standard. In every school where the numbers and the staffing allow a measure of classification, the brightest pupils would be taught together in each subject, and, without any increase in the time allotted to it, would have the opportunity of advancing at their natural rate of progress.

TRAINING FOR TEACHING.

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STEP by step education moves forward towards greater perfection of organisation. The appearance of the first number of the *Training College Record*[1] is a sign that the professional colleges for the training of teachers are determined to keep in touch with each other, and with the spirit of progress. The Training College Association was founded in 1892. Before that date "the various colleges scattered up and down the country were isolated units having no cohesion among themselves." The formation of the association has established "an organised body entitled to speak on behalf of the colleges as a whole." It has also given men and women engaged in a task of the highest national importance an opportunity for mutual consultation as to methods and results, for explaining and discussing new experiments, for arriving at a general acceptance of what is best, both on the theoretical and the practical side of their common work.

At the sixteenth annual meeting of this association, a discussion took place upon the simplification and the strengthening of the curricula. This discussion marks a growing consciousness of strength among the members of the association. Previously they were satisfied with criticisms of the regulations, and suggestions as to their amendment, but now, as experts in the training of teachers, they are going forward to constructive work and the reorganisation of the system.

"Training" is no longer—even if it ever was—

[1] "Training College Record." Vol i, No. 1, March, 1908. 104 pp. (Longmans). 1s.

what the superior untrained graduate has been in the habit of contemptuously considering it, a mere fitting of half-educated minds for the mechanical performance of a humble trade. Nor is it merely secondary instruction specially adapted to the needs of those who are destined to teach in elementary schools. It is just as necessary for the teacher in the secondary school as for the teacher in the humblest elementary school. General education is not a sufficient preparation for success in the arduous and difficult work of the school. A university degree—even an honours degree—is not a guarantee of fitness to teach, to manage a form, to organise and govern a school; it is not even a guarantee of full professional knowledge. In the past there has been a foolish assumption that knowledge and teaching power were synonymous, and there are few schools that have not suffered in consequence.

But, conversely, good teaching needs culture as well as training, ideas as well as experience. Only barren results will be obtained by the teaching of a man or woman whose mind has not been stored or educated. The day of beggarly elements is passing away. As an able inspector of schools wrote some time ago: "It is beginning to be recognised that it takes a master, not an apprentice, to make instruction simple, and that it requires uncommon science to bring out the science in common things, and make the general idea glimmer through the facts." Given proper training, all increase in knowledge is increase in teaching power. One of the great problems for the training colleges where the cultural and professional education of the teacher are carried on side by side is the right adjustment of the balance between academic and practical work. In Prof. Raymont's words, "the question of questions is the relation of the general and the professional studies."

There is a tendency to limit professional work to supervised and guided practice in teaching, or to "the theory and practice of teaching the actual matter of the school curriculum." This is in accordance with the popular view, which is held even by the majority of teachers. But the professional training of the teacher should imply a great deal more. In discussing the subject sufficient care is not taken to have a clear understanding of the terms. If we are not sure about the teacher's functions, and what is meant by a school education, we cannot set about training individuals towards efficiency in the performance of these functions. The teacher, even in the humblest type of school, has a higher duty to perform than that of imparting information to the pupils under his charge. He is more than an instructor in reading, writing, and arithmetic, or in classics and mathematics. As Miss S. Walker said, the public "is beginning vaguely to demand other things, such as a race of healthy children, possessing resourcefulness and initiative." The teacher should be an expert in education. Prof. Welton suggests that a teacher may be an expert in school work without being a specialist in education. "Whether they are specialists in education in the wider and truer sense depends upon the breadth and sanity of outlook by which they see their own efforts in true relation to the one whole complex social, intellectual, spiritual, and material life of their age and country." A really good professional training should fit men and women to be educators as well as teachers. The function of the teachers is not merely, as the simple-minded may think, "to teach"; but if we believe our national codes, our Royal Commissions, our clergy and our educational reformers, it is to promote the health and physical fitness of his pupils, to polish their manners, to develop their characters, to fit them for citizenship, and to secure the betterment of society by the ethical and religious influences which are brought to bear upon them. For such complex functions the necessary training must be wider and fuller than has in many quarters been thought necessary. In order to perform them satisfactorily the teacher must be trained on various lines.

(i) *To know.* And his knowledge must be (*a*) of the subjects in which he is to give instruction, and of other subjects implied in a good general education.

(*b*) Of the living organism he is to educate (1) on the physical side, (2) on the mental side.

(*c*) Of the meaning and aim of education, and the various views which have been held at different times and in different countries regarding its aim.

(ii) Teaching is a practical art, and the teacher must be trained to *apply his knowledge*—to instruct on the best methods, to control his class, to organise his school. The teaching aptitude must be developed into expert skill, the power of so handling a class as to make the best, not only of the class as a whole, but of the individual members, must be fostered by wise advice and guidance; the young teacher must be taught to feel at home in the school, and to utilise the law and spirit of the school for the promotion of moral ends.

It is complained that at the colleges "there is little time for students to form good teaching *habits.*" Now it is very doubtful whether it is desirable for the young teacher to settle down into "habits" during his training course. He should rather be receiving the scientific experimenting and inquiring impulse. He should be set upon right lines, and at the same time he should retain his power of adjusting and readjusting himself to new conditions and to new results. The fault of the old system was that the pupil-teacher early acquired hard-and-fast *habits*, which no amount of study enabled him to throw off. His teaching became a mere mechanical and uninspiring art.

The good school is a great institution, where the experience of life is wisely anticipated and epitomised, and where children are being adapted to the wider life and work of the world. Mind, the great instrument of adjustment, is there nurtured and disciplined, character is being formed and moulded through games, through personal intercourse with schoolfellows, through the guid-

ing personality of the teacher, and the law of school society. The children are initiated into civic life—life in institutions—by being gradually adapted to the ordered life of the school. The organised physical exercises result in health, vigour, and self-control; the teacher himself as a living embodiment of law, love of knowledge, devotion to work, reverence, becomes gradually a part of the pupil; the law without becomes in time a sense of duty within.

If the teacher is to make the influence of the school all that it may be in the lives of the children, his training must be no mechanical or narrow one. It should give both knowledge and power—or the knowledge which is power.

Wherever it is possible, and especially in a university centre, a scheme of training should be wide enough to take into its purview all types of schools, and should aim at attracting the best and ablest students of both sexes. This is now attempted in Scotland by the Provincial Committees connected with the four university districts, into whose hands the training of teachers has been entrusted by the Education Department. It is worth while to direct attention to the professional courses of study which these committees have agreed to adopt. They are worth careful consideration. Personal and school hygiene comes first, and the course extends to not less than seventy hours of instruction, a considerable part of which is practical and clinical. In psychology, logic, and ethics the period of instruction extends to not less than 150 hours, and it is provided that experimental and observational psychology shall form an integral part of the course. The principles of education (including history of educational theories and systems) must be taught in a course which shall cover a period of instruction not less than 100 hours—this forms a full graduating course of lectures for the arts degree. In addition, twenty hours must be devoted to the study of present-day educational problems, and the consideration of the school systems of other countries, or as an alternative twenty hours must be devoted to infant school or kindergarten methods. The last subject among the professional courses is methods of teaching with correlated practice, and this course must extend to not less than 240 hours. The arrangement of this practical and technical work is in its details left largely in the hands of the director of studies and the masters of method.

Whether the student shall take his non-professional subjects, and such professional subjects as logic, ethics, principles and history of education in the university or in the college depends upon the general ability of the student. If on leaving the secondary school, or secondary department, where he has received his education as a junior student, he obtains a pass in three subjects for the higher grade leaving certificate, he may attend classes at the university; otherwise special lectures are provided in the training college.

It should be carefully borne in mind that no matter what type of school the student is preparing for—elementary or secondary—he has to go through the professional courses just detailed. The ordinary graduate who desires to obtain a certificate must take this course, and so must the honours graduate who desires to obtain a qualification for a secondary school. For the non-university student in the training colleges the course is the same, but the lectures on psychology, logic, ethics, and education are given by different lecturers, and probably on a somewhat less difficult standard.

It is a pity that the president of the Training College Association should have thrown cold water upon the modern enthusiasm for personal and school hygiene. But fortunately the effect of his somewhat foolish words is more than counterbalanced by the able paper of Sir Lauder Brunton, in which he shows most clearly the great practical importance to the teacher of a knowledge of hygiene. It is evident also that the work of medical inspection cannot be properly carried out without the intelligent co-operation of the teacher. The trained teacher of the future will study "the physical health and physique of the scholars, the signs of distress and fatigue, physical or mental, the methods of detecting and dealing with physically and mentally defective children, and the use of games as physical training."

He will also notice "whether the child is alert or stupid," and he will know that "apparent stupidity is frequently due, not to any want of brain power, but to defect of hearing or sight," or to adenoids. He will also know that laziness in a child is an unnatural thing, and may very likely be the indication of serious disease. Inattention, listlessness, languor, irritability, will have a new interest for him. He will try to find their causes, and therefore their true remedies, and not rush at once to punishment as the natural and only cure.

As to the value of the history of education in the training of teachers, Prof. Welton shows that a real understanding of the present can be reached only through the study of the past. He claims that the study is of value as an instrument of liberal culture, bearing surely on professional life, leading to broader views, and throwing light on many practical problems of our own day. It is "the most potent instrument available for forming the broad-minded and clear-sighted educator, in lieu of the narrow, pedantic, and self-satisfied teacher."

The value of experiment in education is clearly pointed out by Prof. Green. If there is to be a science of education, we must cease to rely so much upon tradition, and turn our attention to the facts. These must be investigated under "field" conditions, and by means of comparative statistics, and by experiment we must endeavour to reach principles of universal validity. The teacher must be so educated and trained that he will be *capable* of conducting scientific inquiry in his great laboratory—the school. In the last few years there has been an extraordinary development of interest in the scientific aspects of education, and the school is now recognised as a field

offering unbounded possibilities for original observation and investigation. The teacher has his laboratory ever with him, and a continual supply of the most interesting material to observe. His problem is at once a scientific and a practical one. As a responsible teacher he must not be satisfied merely with observing and theorising: he must educate. But the open eye and the trained intellect of the scientific teacher should lead to a more real and true success as an educator. Knowledge is power, even in the school. A man who is awake to the full possibilities of his work is saved from the deadening influence of routine. The potentialities of his class, however humble it be, the presence of young, growing human beings, whose every look, every movement, every answer, every exercise, has a scientific, an intellectual, and a moral value, may render the teacher's work full of romance, of possibility, of infinite interest.

We are waiting for careful records from the patient and observant teacher who will collect the facts of physical, mental, and moral growth which come under his observation; who will observe and note the relations and mutual influences of the mental, the physical, and the moral in the children growing up under his care; the deviations from the normal which may mean crime or genius; the various reactions to the same stimuli in children of different temperaments; the influence of individuals upon the class, and of the class upon individuals; the comparative influence of pupils and teachers; the effect of weather, temperature, play, and fatigue upon pupils of various ages and types; how far and in what ways literature influences through suggestion and imitation.

With the right kind of training we shall hope to have teachers who will not only educate better, but also transform our schoolrooms into great scientific observatories, and find in them a field for fresh intellectual, social, and moral effort.

Schools for demonstration, practice, and experiment like those in Manchester, America, and Germany are becoming a necessity. They must be open for purposes of investigation and for the training of the teacher, as well as for the education of the children. Prof. Findlay holds rightly that the "interests of the work will be best secured by putting such schools in a category of their own, inspected and aided as part and parcel of the work of the training college, for whose benefit it exists."

There is one aspect of training which is specially worthy of the notice of men of ability and academic distinction, namely, its value as the entrance to a career. In the old times the training of the normal college was not supposed to lead anywhere except to an ill-paid mastership in an elementary school. But with the expansion of the school, the increasing importance attached to education, the greater meaning that is being read into the word, the greater complexity of the teacher's functions, this is rapidly being changed. It would be easy to-day to enumerate a long list of important and well-remunerated appointments, with salaries ranging from £300 to £1,000 a year, which have been filled up in this country within the last decade, and in the selection for which the fact of special professional training has been counted a weighty, if not a necessary qualification. The number of these valuable and influential posts is increasing every year, and yet able men hesitate to enhance the value of their degree by devoting one year to special preparation, and a few more to the acquirement of experience. Inspectors of schools, directors of education, professors of education, principals and lecturers in training colleges, masters of method, headmasters of new and efficient types of schools, will doubtless in the future be largely chosen from among those who have not only proved themselves able men at the university, but have gone through a good professional training and acquired some experience in the actual work of teaching. We have been learning the meaning and value of efficiency, and are more and more determined to secure it.

At least one shrewd headmaster of a great and well-known public school has awakened to the fact that there is a career for the boy who will deliberately choose education and set himself to acquire the equipment and training which would deserve success. When the truth is better known others will follow his example, and advise their best pupils, when they have graduated at the university, to take a full course of training with a view to a career in the higher fields of education.

THE TEACHING OF SCIENCE IN SECONDARY SCHOOLS.

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A PROFOUND conviction of the educational value of elementary natural science as a branch of study in the curriculum of the secondary school, and a measure of dissatisfaction with the results attained by various reformed methods of teaching the subject, have compelled us to turn our attention to the question whether or not we have gained all that can be desired or even reasonably expected from our improved methods.

There is no need to refer here to the development and improvement that characterise the elementary science of to-day as compared with that of ten or fifteen years ago; but the earnest teacher may well inquire whether in his work he is sufficiently adapting his methods to the enlightened ideas that have brought about that development, whether he is not unduly exaggerating the importance of some features while minimising that of others, whether, in short, he is reaping the best *educational* results from the method he uses in his class teaching.

Considerations of space and time preclude full discussion of the relative merits of chemistry and physics as subjects of the secondary-school curriculum. Both branches will claim a share of attention, but it should be pointed out that what is usually called experimental physics is—at any rate as regards the earlier stages—mere measurement, practical mensuration; it has its value, and is necessary, but it belongs to mathematics, and to describe it as *experimental* is simply a misuse of terms.[1] Moreover, the experience of many enlightened science teachers tends to confirm the opinion that the exaggerated importance that has recently been attached to gravimetric methods has exerted on the intellectual activity of pupils between the ages of twelve and sixteen as paralysing an influence as was ever produced by the old and discarded demonstration methods. This may appear a bold statement, but it will be fully borne out if reference is made to the opinions of experienced inspectors and teachers in secondary schools.

The value of chemistry as a school subject is well expressed by Prof. Arendt, of Leipzig, an eminent educationist and science teacher. He says:

The first principles of chemistry are much more easily conceived than those of physics—a suitable selection and fitting treatment being premised. With no subject is it so easy as with chemistry to induce in pupils of all ages from ten up to the sixth form a decided and very great empiric interest, the source of which lies in the mysterious, almost magical, chemical changes, which are often extremely surprising and full of effect. Herein there lies a great danger for the teacher; for if he neglects or does not understand how to make each point of interest lead on to a new one, the interest appealing merely to the senses becomes dulled. For every age this interest is a different one, and for the more mature pupil it becomes the speculative interest through which serious reflection on the observed phenomena is induced, so that he really finds the most elementary things worthy of his closest attention. In this the teacher is aided by the methods of scientific research which, if properly handled, can be made to serve as a practical school of inductive logic, the principles of which the pupil unconsciously follows and assimilates as rules of thought in his intellectual life.

In order to keep this speculative interest continually alive the teaching of chemistry offers various aids in the form of the more or less lively excitation of certain feelings. The *search* after suitable methods of verifying a hypothesis or inference, the *expectation* of the anticipated result, the *joy in successs* when the latter takes place, keep the mind in a constant state of tension and maintain interest in the most elementary things.[2]

There can be no doubt that it is chemistry, rather than physics, that lends itself the more readily to treatment such as Arendt indicates in the above. Chemical changes are accompanied by different distributions of mass and by changes of volume and state, and the pupil's interest is sustained by his consciousness of a growing intellectual power to control chemical change in his own experiments. The fundamental principle of chemistry is the conservation of *mass*. In spite of changes of form all substances must be present somewhere after an experiment. The fundamental principle of physics is the conservation of *energy*. The comprehension of this demands higher intellectual powers; hence the more difficult physical measurements have little reality for young minds. The former principle can be intelligently led up to and grasped by pupils at a far earlier age.

Our object, then, is to suggest fresh methods, or, in some cases, development of existing ones, rather than to criticise or attack the valuable work which others have done and which has been of benefit to all science teachers.

Let us proceed to lay down some of the principles which have guided us in forming our conclusions.

Experience shows that the success of the teaching depends principally, if not entirely, upon the due observance of three fundamental considerations. These are:

1. The necessity of dealing at the outset of the course (and in beginning any new section of the work) with what is absolutely familiar and well known.

2. The need that the pupil should have some definite *purpose* in making each experiment, the experiments themselves being selected (or suggested) in accordance with some definite *aim*.

3. The importance of gradually and deliberately *leading* by natural steps to what is less familiar: the development of the subject being determined by psychological rather than logical considerations.

Trite as these maxims may appear, their importance is frequently overlooked. In a school course we often assume a knowledge of the ordinary properties of air or of elementary hydrostatics. Does this knowledge really exist? Frequently there occur gaps, or leaps, in the flow of ideas, which conclusively show that there is no assimilation, no "apperception" at all! Rarely indeed does each "section" of the work lead smoothly and naturally to the succeeding section, and no attempt is made to arrange the work in sections which shall follow the order of working of the *child's* mind. Some have substituted for this the order of historical discovery, a knowledge of which is of supreme interest to the teacher. He should, however, exercise discrimination as to adopting this sequence for his class work.

Careful questioning before and during an experiment will often reveal that, so far from any train of ideas having been consciously followed in the work, the very purpose of that particular experiment is lost sight of; consequently there is not that intelligent anticipation of the result which Arendt urges, the expectation and the joy in success are lacking, and the so-called experiment is shown to be unworthy of the name.

We have abolished the old system of "demonstration lessons" in which the teacher performed

[1] Cf. "The Practice of Instruction" (Prof. Adamson), pp. 372-3; also Prof. Adams's article in THE SCHOOL WORLD, January, 1908

[2] "Lehrproben und Lehrgänge aus der Praxis der Gymnasien und Realschulen." Seite 78, Heft 6. Januar, 1886.

the experiments, the class looking on and subsequently imitating, but in many cases we have introduced a new and worse form of demonstration lessons by our use of text-books in which the experiment with all its details is once more suggested by the teacher.

If, as we are convinced is the case, the remedy lies in the direction we have indicated, the observance of these considerations will bring about a change in the method of the teacher. In the first place, his attitude towards his class will be marked by *self-repression.*

The class must regard the work as an inquiry on which *they* are engaged: their self-activity must be encouraged in every way. If the aim of the work is clearly understood, and if they are dealing with the familiar and well-known, individual suggestions as to experiments or as to the methods of investigation must be demanded, discussed by the class, and utilised wherever possible; for only thus can the teacher keep in touch with the minds of his class, and be assured that the work is not in advance of them. Occasionally erroneous methods will be suggested, or the precautions necessary to the success of an experiment will be neglected. The resulting failures are not without their value. The reasons for them will often be discovered by the class, and should be suggested by the teacher only as a last resort. The teacher must be free to question individuals while they are actually engaged in the experiments, his questions calling to mind past work which may throw light upon the present investigation and ensure the intelligent apprehension of the train of ideas which have originated it. The necessity for this self-repression cannot be too much emphasised: it will undoubtedly present difficulty to the keen and earnest teacher, but its absence must inevitably result in failure and disappointment; the habit of it must be acquired, for only in this way can a true estimate be formed of the success of the work, and further ideas gained as to the improvement of it.

In the second place, there will obviously be the need of *avoiding side-issues,* which may unduly occupy attention to the exclusion of the main line of thought, and the teacher must exercise wise discrimination. He must, on the one hand, omit nothing that is essential to the understanding of the point under consideration (particularly when the point has been suggested by the class), yet he must rigidly insist on the pursuit of the main line of thought to the exclusion of side details. It is quite possible, for example, to show a gain in mass by the use of the balance, without an elaborate series of lessons on accurate weighings and decimal weights and measures. Simple pieces of apparatus may well be fitted up, and such operations as distillation, filtration, evaporation dealt with as required, and there is no need for digressing into a tedious set of exercises on any one of them.

From what has been said it is evident that many of the conditions under which the teaching of elementary science is at present carried on must be greatly altered.

In the first place, experience has shown that with large classes it is impossible to carry out such a scheme of work efficiently. When these number more than fifteen pupils, the all-important work of detailed questioning (just referred to) and of correcting note-books becomes so heavy that the teacher is driven back upon stereotyped methods, and the work tends in the direction of mere "drill." Instead of questioning the slower pupils *individually,* he has recourse to *general* class questioning, and thereby runs the risk of seriously misjudging the results of his work. For in many cases the pupil who appears to be slow will reveal, on being questioned, that his apparent slowness is due, not to want of thought, but to more profound thought; and to produce this serious, deliberate, reflective attitude of mind is the very object of all the teaching. Moreover, the larger the class the less opportunity will the teacher have for earnest reflection upon the value and success of his methods, and the less likelihood will there be of his recognising and adopting those modifications, improvements, and extensions that are desirable.

A lecture-room or class-room adjoining the laboratory should be available for class use as circumstances demand; for no predetermined series, either of "lecture-experiments" or of "class-experiments," should be imposed upon teacher or class. An ordinary class-room, containing a table fitted with water and gas, is all that is required; tiers of seats are unnecessary. Such easy access to experiment will be found of great use when, for example, a problem having been set, each pupil is required to indicate by a sketch his proposed experiments *before* attempting them in the laboratory, thus ensuring individual work and preventing mere imitation of others; or again, when the teacher desires to arrange and summarise facts or to place his own experience at the disposal of the class, as in suggesting or leading up to new and improved forms of apparatus.

One of the essential features of successful work on the lines indicated is that problems should naturally present themselves, such as the pupils may reasonably be expected to solve. Only experience can guide the teacher in forming an estimate of the absolute difficulty of these problems and of their relative difficulty as determined by the pupil's previous work. Given the experience and a suitable problem presented to the class, how can the teacher ensure that the best pupils be allowed the power of initiative and the remainder be urged to activity with a modicum of assistance? In mathematics this is easy, for a problem is set and the teacher's observation of the pupil's *result* and *method* quickly gives him the required information: in science the difficulty is greater, and in many cases the comparative failure of science teaching may be attributed

to this inability to test whether there is individual mental activity. The usual device is that of a *general* class-discussion of method to be adopted in experiment, but this does not ensure a real attempt on the part of the individual pupil: the brighter pupils' suggestions are probably accepted and acted upon, but there is no guarantee that the slower ones have exerted themselves to think the matter over at all. Some kind of "sifting" process is necessary. Note-books will often reveal that certain pupils see the trend of the work and can suggest further experiments. These, after some criticism of apparatus or method, will be allowed to pursue their work in the adjoining laboratory. Others, assembled in the class-room already referred to, will be questioned; the similarity of the present problem to other problems will be elicited; many will suggest experiments and apparatus, and will join their classmates in experimental work; others may even need to be *told* what to do, but even then will be able to inform the master as to the object of the experiment, what gave rise to it, and what they expect from it, *before* their work in the laboratory. This method will be found infinitely preferable to the circulation of printed "summaries," which, professing to recall past work, may easily prove deceptive, in that they "sum up" knowledge which has not been attained, and the "words" in which they are expressed are mistaken for "ideas," which, however, do not exist.

The advantages of the "sifting" method have been proved by experience: the slower pupils are stimulated by observing the success of the others, and—a most important result—it is possible to ensure that they individually think out the problems and the means of solving them.

It is unreasonable to urge as an objection to these methods that existing arrangements do not permit of their being carried out; for existing arrangements could easily be altered, if the supreme importance of individual activity on the part of the class were recognised.

Text-books will not be used, at any rate during the first three years. Although various advantages are claimed for their use, this decision appears to be justified by the risk of their abuse, a risk which is not merely imaginary. Is it likely that the pupils will attain the ideal—that of a body of scientific knowledge built up by themselves, the result of *their own* observation, generalisation, application—if the teacher puts into their hands any text-book in which the results toward which they are working are already set down in more or less detail? Moreover, if the things to be aimed at are spontaneity, originality, and earnest reflection upon the observed phenomena and their bearings upon the investigation that is being made, then for the teacher to obtrude his own personality to the extent of suggesting, advising, urging, by means of printed "directions," would be as fatal a mistake as for him to revert to "demonstration lessons" and "lectures" in his class teaching. The latter we condemn without hesitation; the former is a step in the same direction: the difference is but a question of degree; the principle involved is the same.

With regard to the question of examinations: the present distrust of them is noteworthy and is well expressed by Prof. Karl Pearson in his essay, "The Function of Science in the Modern State." "The origin," he says, "of the all-pervading State examination system in the United Kingdom was the desire to check nepotism in Government appointments; and," he significantly adds, "to hinder one type of inefficient is not equivalent to selecting the fittest and training them effectively for their specialised work."

To come to the point at once: Can examinations be made to select the fittest, and can they be made of value to the teacher in his work of training? The teacher's object, as has been said before, is not merely to acquaint the pupil with certain facts, but to ensure that such facts form part of a systematised whole. Then they will be capable of scientific demonstration by the pupil. An examination paper *may* test whether the teacher has attained this object, but it must be the outcome of thorough acquaintance (on the part of the examiner) with the work done, of consultation with the teacher as to the scope of his course, and of much careful observation of the laboratory work of the class. Only when these three conditions are fulfilled can a written examination be regarded as reasonably likely to "select the fittest," for only in this way can a fair and impartial test be applied. A "practical examination" *may* test manipulative skill, but here again most careful precautions are necessary. The problems set should not be such as may be familiar to certain pupils by reason of their having previously been met with in their work; the element of chance must in this way be eliminated, and reasonable scope must be given for initiative and originality: this condition is one most difficult to fulfil. Again, sufficient time must be allowed if results are to have any value, for it is unreasonable to require a pupil to stake his reputation for careful observation on the results of a small and limited set of experiments: it is contrary to all those canons of scientific method by which his work is governed.

The whole business of "selection" could really be left to the skilled teacher, for in the course of his work he constantly observes the way in which "new" problems are attacked by his pupils; he can classify them as "clever" or merely "average," and the note-books afford further indication of the power of arranging facts, of recognising their relation to those of past experience, and of anticipating new ones.

There is another important function of examinations, that of providing some comparison of the standard of work in different schools, and consequently some estimation of the value of the teacher's work. If an examination were carried out as indicated above, and if it took into

account the teacher's own opinion of his pupils' work, modified by the impartial criticism of the more experienced inspector, and supplemented by a paper set by the latter after consultation with the teacher, then there would be ample means by which the inspector could estimate not only the relative merit of each pupil, but the efficiency of the teacher and the organisation of the school.

The note-books should be a true reflection of the pupil's thoughts with regard to the work; there should be some guidance at the beginning, but it is necessary that the pupil should frequently write out his own impressions in his own manner, and this is best done at home. He should be trained to preface his description of an experiment by a short account of what led up to it and of the *reasons* for performing it; and to conclude with an allusion to any problems that arise therefrom, with suggestions for their solution. Thus he is ready to commence work at once on entering the class.

If a pupil has *definite* ideas, his difficulty of talking about them and of writing about them is greatly diminished, and the note-book account becomes a little essay on facts of his own experience. An essay may, indeed, be demanded at the close of any particular series of experiments, and the advantages of such a method are very great. In correcting this the teacher becomes acquainted with the weaknesses of individual members of the class, and such a summary is of much greater value than one drawn up by the teacher himself. The power of composing such a logical summary grows with the pupil's mastery over language, but it will be impossible for him to make one at all if he has not realised the *facts*. If found deficient in this respect, he must accept the logical consequence of his slackness, and nothing but a repetition of his work will make up for the deficiency; this repetition is by no means to be despised, and opportunity must be given for it; in very many cases it turns out to be of the highest educational value.

In conclusion, the points touched upon in this paper may be summed up as follows: the present dissatisfaction with the teaching of elementary science is attributable to the defective methods adopted by the teacher, and is not due to the unsuitability of the subject to the secondary-school curriculum. The course must have a psychological rather than a logical basis; the teacher must be in closer touch with the pupil and with his mental attitude to the work, and it is essential that he arouse the self-activity of each individual of the class. To secure this result changes in class-room and laboratory accommodation, in the use of text- and note-books, and in our system of examination and inspection, are urgently needed.

Simple Object Lessons from Nature. By Jane B. Dickens. 63 pp. (Philip.) *2s. 6d.*—Teachers in infant schools will find these lessons, with the accompanying sketches for blackboard work, sufficiently simple and suggestive.

SOME SPECIAL AIDS IN THE TEACHING OF GEOGRAPHY.

By J. H. LEONARD, B.Sc.

AN experiment on a fairly comprehensive scale has been in progress in the teaching of geography at the Holborn Estate Grammar School; and it has been suggested that some account of the methods followed and the results obtained would prove of interest. Briefly, the idea to be worked out was the utilisation of colonial publications and foreign railway prospectuses in teaching the geography of their special region or country; and although it may be urged that many teachers already avail themselves of such material in the preparation of their class lessons, it is believed that a far more extended and varied use of this literature would be interesting and profitable to learners of all ages.

As to these materials themselves, one or two examples in detail will make clear their type and variety. For instance, in the case of New Zealand we have the following publications: two large maps, "The Official Year-Book," a smaller "Handbook," "Health Resorts," and the larger "Handbook." The last two are beautifully illustrated; and in get-up and pictures the "Handbook" occupies, with the "Natal Handbook," the first place among such productions. Again, the Queensland Agency's publications include "The Year-Book," "The Handbook," "The ABC of Statistics," "The North Queensland Coast," Queensland "Dairy Farming," "Emigration," and "Railways," "West Moreton, Queensland," and "Australian Industry." The last-named—a capital book of reference, fully illustrated—is issued by the Federal Council of Chambers of Manufacturers of Australia. These will, perhaps, suffice as examples of complete lists; but, amongst many others, mention must be made of "The Canada Atlas"—crammed full of pictures of towns, buildings, and scenes in the Dominion, together with several good maps; the handbook of Tasmanian forestry; the book of cave-pictures of Western Australia, and the map of this colony with Great Britain on the same scale for comparison; the capital geological map of Nova Scotia; and the beautifully illustrated "Sport in Rhodesia" and "Sport in British Columbia."

There is, however, another mine of educational wealth besides those supplied by our colonial agencies. The Canadian Pacific and the Union Pacific Railways issue a host of booklets—nearly all illustrated, and many of them with splendid views of the regions through which the lines pass. There are "Montreal," "Calgary," "Edmonton," "The Yosemite Valley," "The Big-Tree Country," and "Where Gush the Geysers." Both railroads publish capital maps—the Union Pacific wall-map is especially instructive; and their time-tables, too, have their own particular interest.

The material is evidently varied enough; but the uses to which it has been put are more varied

still. Roughly speaking, one may distinguish between the employment of these publications in the class lesson and on the walls of the schoolroom. In the former case, where circumstances have permitted, the pamphlet issued by the Agent-General for a particular colony has supplanted the usual text-book portion as a home lesson. This was done, for example, in reading up Nova Scotia. The boys took the pamphlet home, and it was found that the pictures, the descriptions of the country and its products, and the information concerning the occupations of the people, had combined to give the young learner such a mental presentation of Nova Scotia as he can hardly fail to retain so long as he keeps a working brain in his head. The "Canada Atlas" was similarly employed; and it was remarkable what interest was roused when the extent of Canadian agricultural operations was realised. If the illustrations in this "Atlas" had pressed home this single fact alone, the "Atlas" had abundantly justified its use. But the illustrations in this and many other cases have been found to do much more than merely prove attractive for their own sake; the eye constantly wanders to the adjacent paragraphs for information; these paragraphs are read—what is more, they are read at the precise psychological moment for the information to make impression on the memory.

The two forms, to which the above more especially refers, contained boys of the average age of 13¼ and 14¼ years respectively. But whatever the age, if the best results are to follow, it is necessary to explain clearly to the class how to read a pamphlet; when this has once been done it need not be repeated. In the above instances the pamphlet was given out to the form towards the end of a geography lesson. For a few minutes they were left to rummage about it at will, and, if anyone has not seen a class so engaged, the keenness exhibited will probably come with something more than surprise and will set him thinking. Attention was first called to any feature of the cover, and the class proceeded to turn over the pages as directed, while the headings and subdivisions were pointed out, and comments made on any special pictures or diagrams. The boys were strongly advised not to try to remember figures except a few "constants"—the fact was thus emphasised that statistics are highly variable. Nevertheless, in a table of statistics—of exports and the like—the pupils were led to point out the outstanding features; *e.g.*, what was the highest, what the lowest, and so forth.

For quite young children these books are a never-failing source of all kinds of geographical information. The rivers, waterfalls, glaciers, and mountains—the plants, the animals, the people—are all depicted in such variety that many a lesson can be spent in descriptions and narratives which interest and amuse. The Southern Pacific Railway issues illustrated travel-handbooks which have been found to be adapted admirably for an occasional lesson in the form of a journey, in which the pictures show what would be actually seen at different places *en route*.

Leaving now the use of these publications in the class lesson, attention may be directed to other modes in which they have been found to be of great service. The maps, both large and small, are of course hung on the schoolroom walls, and changed from time to time. The smaller maps of any special region are placed for the time in the room of the form whose work would be assisted by them; they are changed as required. The map of a railway is similarly used; if possible, the main-line time-table referring to it is hung next the map. This was done, for instance, in the case of the Canadian Pacific Railway, and excited some amount of curiosity; many comparisons were made between American and British railways, not only with respect to the distances traversed, but also with regard to the scheduled times of running. A scheme is also on hand in which one or more of the undistributed pamphlets are to be cut up, the best views pasted on a board, region by region, and varnished. The plan is to distribute the boards through the class-rooms and shift the sets of pictures from time to time, according to circumstances. There is little reason to doubt that this will prove a highly successful method of familiarising all with the types of scenery in other lands.

Finally, all the more important colonial and railway publications are included in the school library. They are thus available for reference or for home reading. The smaller pamphlets are also placed in the library, but in their case a judicious selection should be made, and these clamped together between covers of some sort—one colony or State under one cover. The necessity for making a selection of pamphlets will be obvious when it is recollected that they are not all of the same permanent value; moreover, some of them—*e.g.*, advice to emigrants—are of little service in a school library.

Without indulging in generalisations, some of the definite results may now be reviewed which have so far accrued as the direct outcome of the above methods. Undoubtedly the first is the awakening and strengthening of a living interest in the study of other lands. Boys have brought, for exhibition or comment, newspaper cuttings concerning the countries at which they are working; illustrations from periodicals; articles in current literature; photographs which they may have at home of localities under discussion; special maps bearing out some fact which they have had brought before them. Moreover, this interest is not confined to the countries being studied: one boy brought an excellent map—his own work and on his own initiative—of our newly acquired Malay territory. This is, besides, a special instance of another direct result, viz., the desire evinced by all except the dullest to be as thoroughly up-to-date as possible; the literature they get is "hot" from the press, and the warmth is felt and acted upon: witness the frequent question, "Please, sir, can I have a new

book? this one doesn't say (so-and-so)." Further, the hunting-up of facts leads to contact with original sources of information, and the valuable truth is unconsciously learnt that "investigation" is not confined to scientific work pure and simple, but that the faculty is to be used anywhere and everywhere in getting information.

Two more results call for notice. The "preparation" of a pamphlet as home work brings out very remarkably a boy's innate bent of mind; he will pick out from all else what appeals to him individually, and will, besides, acquire a wealth of detailed information about it which is often surprising. Any educational work which throws light on a learner's special aptitudes is to be welcomed; this phase of teaching geography has done this again and again. There is, lastly, the training of the critical faculty brought about by the endless comparisons which arise—between country and country, styles of maps or pamphlets, methods of illustration, and other points. Instances have occurred when a "geography class-book" has had its statements compared with colonial agency publications and has suffered in the comparison. This is destructive criticism with a vengeance; but, taking it all together, it makes for what we want.

Those who feel inclined to make trial of this method in their own classes will be interested to know that the idea is warmly received by all the colonial agencies, and the cost, where there is any, will be found to be trifling. After the pamphlets have been in use in one form they may be collected and kept for a future class, but it will be found a fitting recognition of ability or excellence of work if some of the pupils are allowed to keep the pamphlets they have been using. A matter on which the very strongest stress should be laid is that there must be *no waste*; any want of ordinary care in the treatment of map, booklet, or pamphlet is direct evidence that the pupil in question does not appreciate his advantages. Naturally there is always a certain variable percentage of such pupils, and it is almost useless trusting them with such publications for any length of time. As might be expected, these scholars are those who appear to benefit least by such literature.

It is desirable to point out one danger, though its existence has probably occurred to the reader. All these handbooks, pamphlets, and guides necessarily partake—if ever so slightly—of the nature of advertisements; this is to be borne in mind more especially with respect to railway publications. This aspect of the matter should by all means be touched upon in class; if this be done judiciously, it will only foster the "critical faculty" mentioned above. Attention should be directed to the similar trait in our own guide-books—in themselves valuable geographical class helps. Guide-books, like the literature here considered, only show the best and most interesting aspect of the place they describe; for example, we do not find a visitor's guide to London the less generally useful and instructive because it omits slums, criminal haunts, and other unpleasant topics. With this comparison clearly put, an important lesson will have been given in that most difficult of all departments of geographical learning—the acquisition of a due sense of proportion through a proper exercise of mental perspective.

THE MATHEMATICS OF THE SECONDARY SCHOOL AT THE FOURTH INTERNATIONAL CONGRESS OF MATHEMATICIANS.

By Prof. G. A. Gibson, M.A., LL.D.

At the recent meeting in Rome of the Fourth International Congress of Mathematicians, one of the four sections in which papers were read and discussed was devoted to "philosophical, historical, and didactical questions," and several interesting communications were submitted to that section on the mathematics of the secondary school. For several years school mathematics has been the subject of keen discussion abroad as well as in our own country, and the organisers of the Congress rendered a distinct service to the cause of education in providing an opportunity for interchange of views on the humble but vitally important topic of the mathematical training of the youths who will soon be charged with the duty, not only of promoting scientific research, but of bringing their education to bear on the problems that confront our civilisation.

The conditions prevailing in Germany, France, England, the United States, Austria, Hungary, Italy, Switzerland, and Greece (the countries being named in the order in which they appeared on the programme), were treated by men who had taken a leading part in recent discussions, and who, though not themselves usually engaged in school teaching, were familiar with the educational arrangements they described. The names of Gutzmer, Borel, Godfrey, D. T. Smith, Vailati, and Fehr are probably the most familiar to English readers of those who read (or sent) the written papers; in the discussions, sometimes very animated, that followed the reading of the papers, other well-known mathematicians took part, among these being Niewęnglowski, Marotte, Zeuthen, Enriques, and Peano. It would serve no useful purpose, even if it were possible, to give a summary of the different papers, but these are to be published in the "Proceedings of the Congress," and they deserve the careful consideration of all who wish to understand, not only the present condition of secondary-school mathematics, but also the aims of reformers who find much to criticise in schemes of mathematical instruction that are sometimes supposed in this country to be models for our imitation. It may be of interest, however, to refer to one or two matters that occupied a prominent place in the papers and discussions.

Those who are acquainted with Prof. Klein's addresses and lectures on school mathematics

know what stress he lays on the notion of a function; it might almost be said that in his view the aim of school teaching is to train the pupils to "functional thinking." To secure this end graphical work is to be used largely, and much of the traditional material, such as harder equations and complicated algebraic transformations, is to be cast aside, while, in order to show the far-reaching nature of the notion of functional dependence, as well as to give reality to the teaching, the simpler applications of mathematics are to be kept steadily in view. This attitude seems to be approved generally, even though it is not equally emphasised in the mathematical programmes of the different countries; perhaps the most explicit enunciation of the importance of the conception of a function is to be found in the French syllabus. If the notion of a function be considered as a principle of co-ordination, binding together the various branches of elementary mathematics, then its recognition may be said to be practically universal, as all the programmes now explicitly enjoin the necessity of treating the different subjects of the mathematical course, not as mutually independent but as complementary; thus arithmetic and algebra are not to be banned in the teaching of geometry, but geometry is to provide applications of algebra, while algebra may help in the presentation of geometry. The general tendency is in the direction of making mathematics more real to the pupils by showing the various ways in which it may be brought to bear on the problems that are within the experience of the pupils, or that may be supposed to interest them. At the same time, it should be noticed that there seemed to be no disposition to advocate these methods from the utilitarian point of view of immediate applications; the contention seemed rather to be that the pupils would be trained to correct logical thinking more effectively on the new lines than on the old. The disciplinary value of mathematics was universally recognised or taken for granted.

A very keenly debated question on the Continent at present is the introduction of the elements of the calculus into secondary schools. Even the most ardent advocates of that introduction do not suggest that the treatment should be based on the refined notions that bulk so largely in modern higher mathematics. The objection, indeed, to the inclusion in school programmes of such subjects as the binomial theorem for indices other than positive integers, or infinite series, is that these cannot be satisfactorily treated without bringing in more of the refinements of the modern methods than can reasonably be demanded of the pupils; on the other hand, it is contended that by means of the graphical representation of functions and by appeal to intuition, it is possible to present the elements of the calculus to pupils in such a way that they can grasp the leading principles and successfully apply them in numerous simple but important cases, such as areas of curves, problems of maxima and minima, velocities, accelerations, and the like. To secure time for the calculus without increasing the work of the pupils, the advocates of its introduction would cut out various subjects included in the older programmes; such subjects are equations of the third and fourth degrees (other than approximate solutions of numerical equations obtained by graphical and other simple methods), diophantine equations, infinite series. The trend of opinion is probably in favour of its introduction (in France this has already been effected); but agreement is by no means universal, and there are some whose authority is deserving of respect who think that the arguments against the calculus in schools have not received sufficient weight.

In the course of the remarks introductory to his paper, Prof. D. T. Smith made the suggestion that a committee should be appointed to consider questions bearing on the teaching of mathematics in secondary schools. The suggestion was favourably received by the section, and at the closing general meeting of the Congress it was intimated that a small committee, consisting of Profs. Fehr, Greenhill, and Klein, had been nominated to consider the matter, to enter into communication with representatives of the various countries, and to report to the Fifth Congress, which is to meet at Cambridge in 1912.

THE NEW REGULATIONS FOR SECONDARY SCHOOLS.[1]

THERE are no surprises in the new regulations for secondary schools. In the main, the famous regulations of 1907 stand unaltered. The few modifications lie in the direction of defining more precisely the new provisions of last year. It will be remembered that all secondary schools which desired to share in the new Exchequer grant were required to satisfy certain rather stringent conditions. Denominational religious instruction at the public expense was forbidden, and religious "tests" in the shape of compulsory attendance at religious services, even in the case of boarding schools, were barred. It was, however, laid down that these conditions might in particular cases be waived. It is not surprising to find that the Board has been unable to waive these requirements except partially in one "exceptional" case, and it is intimated that for the future no waiver will be allowed.

Every reasonable requirement, as we stated last year, appears to be met by the provision that denominational religious instruction may be given, if the parents so desire, at other than public expense, and this provision continues in force.

The conditions as to "free places" are made rather more stringent. Last year it was stipulated that free places up to 25 per cent. of the pupils admitted in the previous year must be offered to pupils from elementary schools. Scholar-

[1] Cd. 4037. (Wyman and Sons.) 2*d*.

ships limited to pupils from elementary schools might count as free places. Now, however, it is intimated that these scholarships will only count if they are tenable, by renewal or otherwise, as long as the scholar remains at the school. This may cause some dislocation in the scholarship schemes of both schools and county authorities. It secures that the ex-elementary-school boy who enters the secondary school as a free scholar shall be subject to no more stringent conditions in the way of holding his place than the ordinary paying pupil, and appears to render a "scholarship" system unnecessary unless it provides for a maintenance grant as well as for the payment of tuition fees, or unless the scholarships are for the benefit of the non-elementary-school child.

The new rules as to school fees are curiously detailed—probably the Board has had some delicate questions to decide during the past year as to what "free education" means. The tuition fee must cover everything a pupil requires except books and mathematical instruments. An extra fee may be charged to cover the cost of these, but if this is done the books and instruments must become the property of the parent. The practice which holds in some schools of "hiring out" books at a small fee is done away with; it is a convenient practice considering the difficulty there sometimes is in getting parents to provide the proper books, but educationally it is baneful, destroying the sense of ownership and preventing a pupil from feeling pride in his books. Nowadays school books are so attractive that many boys and girls will be glad to possess them and keep them as old friends. Apparently it will be quite permissible for school authorities to charge the "free scholars" for their books under these conditions.

It is interesting to note that the Board recognises the weakness of inspection without some form of examination. The new regulations intimate that an examination of the school in whole or part, as distinguished from an inspection, may be called for if it is thought necessary. Most schools are by their schemes obliged to undergo a periodical examination, and the rule thus becomes universal. It is a wise step.

Other rules are made which relax slightly the conditions of last year. Any individual pupils may, with the permission of the Board, take a "varied" curriculum—a privilege which was last year confined to pupils over fifteen. It is also made clear that, while Latin must, as a rule, be given a place in the curriculum, it is not necessarily compulsory on all pupils, but may be made alternative, *e.g.*, to German. Stress is laid on the desirability of giving girls thorough instruction in domestic subjects, and it is emphasised that training in these subjects may be substituted for science in the case of girls over fifteen.

The regulations are to be welcomed, as carrying out the very liberal policy which was so striking a feature of the purely educational portion of last year's regulations, but it is to be hoped that before long some provision in the way of free places may be made for the children of poor middle-class parents who prefer not to make use of the public elementary schools for their preliminary education. When will something be done for them?

THE EDUCATION OF ELEMENTARY-SCHOOL TEACHERS.[1]

THE regulations for the provision and training of teachers in elementary schools are becoming so complex that it is well to remind our readers that there are three classes of persons below the status of certificated teachers, viz., pupil-teachers, bursars, and student-teachers.

A pupil-teacher is a person between sixteen and eighteen years of age employed in an elementary school for not less than a quarter, nor more than half a year. The rest of the time is spent in receiving instruction in a "centre" or in a secondary school. This period of training lasts two years, and on its conclusion the pupil-teacher must enter for an approved leaving examination which qualifies for admission to a training college. When the pupil-teacher has passed this examination the Board of Education pays a maximum grant of £15 to the local authority, but in case of failure to pass the grant will only amount to £5.

A bursar is a pupil in a secondary school who intends to become an elementary-school teacher, but who requires assistance to render his continuance at the school financially possible. A bursary lasts for a year only and begins at the age of sixteen, but the bursar must have been receiving continuous instruction in the secondary school for two years immediately before the bursary is awarded. At the end of his year of recognition the bursar may enter a training college, or become a student-teacher. The local authority will, as a rule, receive a grant of £15 on account of each bursar. These young people will have had no previous training in the art of teaching, and will enter a training college without having ever been in front of a class.

A student-teacher is a person over seventeen years of age who has passed a qualifying examination for admission to a training college and is engaged for one year on the staff of a public elementary school. He must have been in regular attendance at a secondary school for not less than three years immediately before his recognition, or he may have been a bursar who has delayed his entrance to a training college. He may teach for four days a week only, and must receive training under proper supervision.

The chief features of the new regulations are that no preliminary examinations of pupil-teachers are required, and the grant will be paid when the course is completed and the examinations passed, for the Board of Education is of opinion that the wastage during the period of pupil-teachership and failures at the leaving examination are unreasonably high.

[1] "Regulations for the Preliminary Education of Elementary School Teachers." [Cd. 4038.] (Wyman and Sons.) 2½*d.*

The new regulations throw out a hint that it is reserved for future consideration whether some period of actual service in a fully-qualified capacity should not be required as a condition of grant in aid of the period of preliminary education.

We notice that bursars are required to sign a declaration expressing their *bona fide* intention to become teachers in a public elementary school, but there is no reference to such a declaration in the case of the pupil-teacher. After entering a training college the bursar is called upon to sign an undertaking that he will follow the profession of a teacher in an approved school ("Training College Regulations," 1907, p. 47), and article 8 defines approved school as not only an elementary but a secondary school, so that it is possible for a bursar not to enter an elementary school after all, and we are inclined to think this is as it should be.

It is most satisfactory to find that English composition and drawing are included in the compulsory Part I. of the examination, and that it is expressed clearly by the Board that the examination in the important subjects of arithmetic and composition will not by any means be of a perfunctory character.

THE EDUCATION (SCOTLAND) BILL.

THE Education Bill for Scotland has passed the first and second readings amid a chorus of approval from all quarters. Much criticism has been occasioned by certain omissions from the Bill, but so far as its contents are concerned they are framed on the most enlightened principles. The all-important question of enlarged areas to deal with all grades of education has been left untouched, to the great disappointment of nearly everybody. But, granted that the area question cannot be dealt with just now, the Bill makes a real attempt to meet the difficulties that surround the provision of secondary education in certain centres. At present the whole cost of maintaining a secondary school that draws its pupils from a wide area is borne by the one parish in which that school stands. In the new Bill provision is made for special grants being obtained for pupils residing outside the parish area. This, at least, is a step in advance, and perhaps as much as could be expected in view of the pronounced parochialism of some of the official Scottish members.

The new Bill contains twenty-nine clauses, as against twenty in last year's Bill. Superannuation again figures in the measure, on much the same lines as last year, except that an attempt is made to meet the case of the voluntary-school teachers. The latter have indicated that they are no more satisfied with the new provisions than with the old, and have declared war *à l'outrance* on the Bill. The general body of teachers has every sympathy for the demand of the voluntary-school teachers for better terms, and will press their claims to the utmost. All the same, it must be remembered that voluntary-school teachers cannot have all the privileges of the voluntary position and also all the benefits of the public-school position. The Bill proposes to allow managers to supplement pensions to teachers just as school boards do, and the Government is prepared to pay half of such allowances out of purely Scottish educational funds. It may be said that managers cannot afford to give anything, but other clauses in the Bill provide for special subsidies to necessitous schools, public or voluntary, and under this head pension allowances will certainly be accepted as a fair charge. With or without improvement these pension provisions mark an enormous advance on anything we have had hitherto. If they are made operative English teachers may be trusted to agitate for an improvement along similar lines in their scheme. Further, it should be noted that the pension clauses apply to all teachers, of secondary as well as of primary schools.

A very important provision is that of clause 7, which practically makes the school board, for the purpose of enforcing school attendance, a judicial authority. The present machinery for securing attendance is so cumbersome and complicated that it is useless, save for the most aggravated cases. The position of the school board is also strengthened in regard to feeding pupils, that body taking the place of the parish council in the clauses of last year's Bill. Perhaps the most outstanding feature is the apparent glorification of the burgh and county committees for secondary education. These bodies are to be the distributing agents for the greater part of the grants from the new Consolidated (Scotland) Fund. But while there is an outward show of entrusting them with far-reaching powers, in reality they live, move, and have their being only as the Department wills. Even the District Education Fund is not to be entrusted to them, but to be doled out by the Department in accordance with schemes of its approval. The Bill, indeed, much more than last year's, further magnifies and extends the arbitrary powers of the Department. Even the universities are definitely brought within the scope of Departmental control, and we may expect soon to find them working under a code. Secondary has just passed over body and soul to the Department as primary education did long ago. The universities still stand out, but theirs is merely the fate reserved by Polyphemus for Ulysses, "to be eaten last."

The clauses giving school boards power to enforce attendance at continuation classes up to seventeen years of age will require to be scrutinised carefully. There must be everywhere fullest sympathy with the desire to extend to the utmost the education of the young and to keep them as long as possible under salutary influence and restraint, but it is questionable if the time is quite ripe for so great a forward step as compulsory education up to seventeen years of age.

It is very satisfactory to find that the subject of

the teacher's tenure of office has been fairly faced. Teachers have all along declared that they would be prepared to trust the fairness and impartiality of the members of an enlarged school board area. But seeing this cannot yet be, it is pleasing to find the Department accepting the onerous position of umpire in school disputes. For this welcome reform alone teachers are prepared to bless the Bill, and for this they should be willing to forgive much to the Education Department. This also is an educational advance of very considerable interest to teachers in England, where the tenure question has all along been more acute than in Scotland.

The main provisions of the new Bill are given in the following summary:

EDUCATION (SCOTLAND) BILL.

Powers of School Boards.—It shall be lawful for school boards, in addition to any powers they at present possess, to incur expenditure for the following objects:

(1) In providing any form of education sanctioned by a code or minute of the Department.

(2) In providing accommodation, apparatus, equipment, and service for the preparation and supply of meals to pupils attending schools in their district, provided no expense incurred for the food thus supplied is charged against the school fund.

(3) In providing educational facilities for cripples and defectives, and for pupils in outlying districts.

(4) In maintaining separately or jointly with other boards an employment bureau for children leaving school.

(5) In providing school books and material to pupils in their schools.

(6) In paying the expenses of delegates from school board and educational conferences of any kind.

Medical Inspection.—School boards may, and if required by the Department shall, provide for the medical inspection of schools and scholars in their district.

Feeding of Necessitous Children.—Provision is made for feeding necessitous children and for recovering costs from parents and guardians able to pay.

School Attendance.—(1) Fixed dates are laid down for pupils entering and leaving school. The age of beginning, *five*, and the age of leaving, *fourteen*, will be regarded as completed on the nearest fixed date after their birthday.

(2) On leaving one school for another, attendance certificates are to be given pupils recording their progress and the total number of attendances made.

(3) School boards are empowered to issue attendance orders for defaulting pupils without going before a sheriff.

Extended Compulsory Education.—School boards are empowered to make attendance at evening classes compulsory, up to seventeen years of age, of persons not otherwise receiving a suitable education. Such classes should have regard to the industries of the district.

Pensions.—School boards and managers of voluntary schools are empowered to grant pensions to all teachers in their service. The Department will be prepared to pay half of any pension so given provided the total pension does not exceed two-thirds of the retiring salary.

Education (Scotland) Fund.—All moneys presently going to education, with the exception of the annual Parliamentary grants, shall be consolidated into one fund, to be called the Education (Scotland) Fund. This fund shall be applied as follows:

(1) To meet the expenses of the examination of secondary schools.

(2) To make payments to the universities and central institutions, such as technical colleges, schools of art, and agricultural colleges.

(3) To meet the expenses of the training of teachers.

(4) To pay pensions to teachers.

(5) The balance after these first charges is to go into a fund, to be called the District Education Fund.

Application of District Education Fund.—This fund shall be applied for the purpose of the following payments:

(1) Paying to school boards' managers the cost of education of pupils from outside districts.

(2) Paying a proportion of the expenses of secondary schools and advanced continuation classes.

(3) Providing bursaries for all grades of education above the primary stage.

(4) Paying travelling or maintenance expenses of teachers attending article 55 classes or special vacation courses.

(5) Paying half the cost of medical inspection.

(6) Paying expenses of organising secretaries or teachers of special subjects, and making contribution to capital expenditure or laboratories, school gardens, &c.

(7) Making special payments to necessitous schools, whether public or voluntary.

(8) The balance to be divided among school boards and managers according to attendance and the necessities of each.

Administration of Funds.—These funds are to be administered by the Department according to schemes prepared by them or with their approval.

Grants in Aid of Capital Expenditure.—Grants may be paid to central institutions in aid of capital expenditure from unexpended balances remaining from previous funds.

The Teacher's Tenure of Office.—Provision is made for an appeal to the Department when a teacher is dismissed. The appeal must be made, *not by* the teacher, but by not less than thirty ratepayers *for* the teacher. If after investigation the Department does not consider the dismissal justifiable, the school board, if it persists in carrying out the dismissal, must pay to the aggrieved teacher one year's salary.

Endowed Schools and Bursaries.—Provision is made for transferring these to local authorities.

Cumulative Vote Abolished.—Each elector may give one vote, and no more, for each of the candidates not exceeding the number of members of school board to be elected.

THINGS NEW AND OLD.

AMONG late arrivals to the increasing Everyman's Library are Marco Polo, Prescott's "Peru," Creasy's "Decisive Battles," a volume of Hakluyt, and Murphy's "Tacitus." All have introductions, and some give accounts of their authors' other writings. It is to be wished, however, that an additional note should give some account of the book itself—for are not they all reprints? They are all welcome, though all except the last are well known. Marco Polo has long been a desideratum. Kingsley's "Water-Babies" and "Glaucus," Abbott's "Rollo at Work and Play," and Ballantyne's "Ungava" belong to the juveniles. Of these, "Rollo," the week-day Sunday-school book, will appear to Mr. Dent's juvenile readers the quaintest. One can never tell what children will like; but there is something *sui generis* about the Rollo books.

To handle a "Treasury of English Literature" (two sections are sent, 1s. each, by Constable) is a treat: the whole volume, admirably edited by Miss Kate M. Warren, has been loudly praised in these columns some time ago: it and its various sections lead the young reader to the knees of literature.

Messrs. E. Arnold, of Leeds, send a strongly bound, well edited "Tales from Shakspeare" (price 10d.), proof, we suppose, that this book of the Lambs is still selling. Among other reprints are a very handy "Book of Golden Deeds" (Macmillan, 1s.); More's "Utopia" *in Raphe Robinson's own spelling* (Dent, 1s. 4d.), edited by Mr. A. J. Grieve; four of Q's delightful booklets—Select English Classics—3d. each; two excerpts from the "Heroes," 4d. each (Oliver and Boyd); Ruskin's "Sesame and Lilies," and some Elizabethan translations of Caesar and Tacitus in Blackie's well-known English texts, 6d. each, edited by Dr. Rouse; the story of "Aladdin," in Messrs. Macmillan's Supplementary Readers (4d.); two edited versions of the "Cloister and the Hearth" (E. J. Arnold, 10d.; Bell, 1s.); and a condensation of Scott's "Tales of a Grandfather," done by Mr. T. D. Robb for Messrs. Blackie, 248 pp., well bound and illustrated, and costing 1s. 3d. We leave to the last in this section a beautiful reprint of the West Saxon Psalter (2s. 6d.) in the famous Belles Lettres Series (Heath). In this dainty book we have the prose portion of the first fifty psalms in Old English. The editors are Dr. Bright and Dr. Ramsay, both, of course, of American universities. Further instalments of this Psalter are promised. One instinctively turns to Psalmus xxii. to find in older garb "The Lord is my Shepherd," and here it is: "Drihten me raet, ne byth me nanes godes wan: and he me geset on swythe good feohland."

Messrs. Harrap send, in the Riverside Literature Series, Malory's "Book of Merlin," 1s.; "Beowulf," 1s.; "The Prologue," "Knight's Tale," and the "Nun's Priest's Tale," 1s. 6d.; and the "Song of Roland," 1s. 6d., all well edited and done in a scholarly fashion; "Roland" and "Beowulf" are specially welcome. "Old English Prose" (296 pp., 5s. 6d.) is a second volume to "Select Translations from Old English Poetry," by Prof. Cook and Mr. C. B. Tucker. The editors' names are a guarantee of the excellence of the work; but one cannot help thinking that the interest of Old English prose is likely to remain philological. Messrs. Ginn are the publishers. Messrs. Harrap also send "Stories from Chaucer," by Mr. J. W. McSpadden, 240 pp., 1s. 6d. The numerous prose versions of the immortal tales lead one to believe that Chaucer is coming into his delayed glory in the twentieth century. A very discriminating "Selections from Dryden," 192 pp., 2s. 6d., is sent from the Clarendon Press. Mr. Hadow is the editor. The Elizabethan Shakespeare ("Love's Labour's Lost" and the "Merchant of Venice," 2s. 6d. each) ought to be welcomed by all who want to see Shakespeare as he was in the First Folio. The print is easier to read than in the reduced facsimile, and the books (edited by Prof. Hudson) have notes and glossaries. Messrs. Harrap publish this addition to our editions.

Mr. G. H. Rose has arranged for Messrs. Methuen a "Baring Gould Selection Reader" and a "Baring Gould Continuous Reader"—a compliment to the sturdy and versatile writer which shows his popularity. The price of each book is 1s. 6d. Mr. H. B. George has prepared for the Clarendon Press Browning's "Strafford," xx+90 pp., 2s. The notes are few, but the introduction is long. One more volume—full of quaint illustrations—is sent by Messrs. Harrap, "The Cave Boy of the Age of Stone" (Miss McIntyre). Clodd is interesting: so is Figuier; but the child will fasten on this book, which shows him how very little difference education has made between him and his fellows who lived thousands of years ago. It is a companion volume to "Days before History."

THE EUMENIDES OF AESCHYLUS.[1]

AFTER a long silence, broken by one or two lectures that gave promise of good things to come, a good thing has come in this volume of the "Eumenides." The style of Dr. Verrall's commentary is more sober and not less illuminating than it was. There are, it is true, still instances where a flash of thought at first seemed to illuminate, but was really an *ignis fatuus*, yet has been permanently hung up in a lantern: at least, such is our opinion of the interpretation of ὡς λόγος τις (4) by "as reason good is" instead of "as a certain legend declares." Apart from the fact that the proposed interpretation cannot be supported, there is a literary clumsiness in this emphasis, which has no point and is not referred to again; whereas Dr. Verrall's suggestion that the Pythia should always know and tell the truth implies that she must be always on duty. Even a police constable has his moments of leisure; and just now the Pythia is off her pedestal, and telling us a story, as any other woman would be delighted to do. A similar stretching of ingenuity is seen in 11, where an erasure in M is taken as a suggestion that a pun is meant on Παρνησσός and παράνησος = παρὰ τῆς νήσου, τοῦτ' ἐστὶ, παρὰ Δήλου. On the other hand, to take δία (54) as a noun from the root of διερός, thus making conjecture needless, seems to us happy, and quite in the best vein of our commentator (who has forgotten τοπὰν?). We have spoken at length on these three verses, because they seem to exemplify the good and bad use of one faculty: which is visible, more for good than for ill, in most parts of the commentary.

In the introduction Dr. Verrall is at his best. His lucid exposition delights and his persuasive

[1] "The Eumenides of Aeschylus." With Introduction, Commentary, and Translations. By A. W. Verrall. lxii+208 pp. (Macmillan.) 10s. net.

eloquence carries the reader away. His discussion of the relation of the play to the Areopagite trials, and the questions arising from this, is subtle and sensible; and his interpretation of the reconciliation between Athena and the Chorus by something "not worded or wordable at all," that passes between them, is in our opinion a brilliant inspiration. Dr. Verrall's appreciation of the dramatic and psychological side of this play makes his book a real advance on the past.

There we are content to leave it. We have gone through it with care, and marked for comment or appreciation a very large number of passages, to discuss which is quite impossible here. We conceive our duty to be rather to indicate our impression of the book as a whole than to direct attention to many details; and we leave it with hearty admiration. Scholars and students alike will find it necessary to their work; and if the student, not yet capable of criticism, may be misled here and there (as we have indicated), that will matter little if he absorbs the spirit of the whole.

EDUCATIONAL ASPECTS OF BIOLOGICAL RESULTS.[1]

PROF. THOMSON'S biological writings are so valuable that it seems peculiarly fitting in this the jubilee year of the appearance of Darwin's "Origin of Species," that a work on "Heredity" should issue from his pen. It was on the foundation of heredity and of variation that Darwin built his great theory of Natural Selection. During the last fifty years much study has been devoted to the investigation of the facts of heredity, and to measuring and statistically tabulating the degree and limits of variation exhibited by species both of plants and animals. The last decade has witnessed an extraordinary display of scientific energy in these directions; thanks chiefly to the discovery of the lost work of Gregor Mendel by Mr. Bateson, to the "mutation" theory of Hugo de Vries, and to the application of mathematical methods to biological phenomena by Mr. Francis Galton, Prof. Karl Pearson, and others.

It is impossible to attempt even a sketch of what has been accomplished by these and a host of other workers in the same field—the *representative* bibliography given by the present author extends over thirty-seven pages. It must suffice to say that though our knowledge of heredity is still very far from complete, yet much has been gained in clearness of conception of the problems that require solution; while in some cases knowledge has attained such accuracy that it has been possible to forecast the bodily features of the offspring of a given pair of parents.

In the work under notice Prof. Thomson sets out most clearly the meaning of the terms "heredity," "inheritance," and "variation"; and in each case illustrates his definitions by admirably selected examples which are intelligible to any educated person. Full attention is bestowed upon "reversion," "telegony," "acquired characters," "the transmission of disease," and other kindred phenomena. Hence the reader is in possession of the facts before, in chapter xi., he is introduced to the theories. It is in dealing with the rival and to some extent complementary theories that Prof. Thomson shows especial fitness for his task. In no sense is he a partisan: each theory is fairly stated, its merits and demerits clearly indicated, its relation to other theories explained. The whole is permeated by judicial impartiality and candid criticism that leave the reader in no doubt of the ground that is sure nor of the conflict of evidence.

The final chapter on "Social Aspects of Biological Results" is full of matter of the deepest concern to all who have the welfare of the nation at heart, and should be read and inwardly digested by all engaged in teaching and entrusted with the care of the rising generation. Truly, a silk purse cannot be made of a sow's ear; but though we are unable to alter a child's natural (inborn) heritage, we have it in our power to afford a favourable environment by the influence of the nurture of literature, the arts and sciences. The sow's ear can yield good leather; it need not be cast upon the dung-heap.

[1] "Heredity." By J. Arthur Thomson. ix+605 pp. The Progressive Science Series. (Murray.) 9s. net.

THE TEACHING OF THE MOTHER TONGUE IN SWEDEN.

IT is not only in our own country that people are beginning to feel that more attention should be paid to "the mother tongue." The question was the subject of an animated debate in the Pedagogical Society at Stockholm the evening before King Edward and Queen Alexandra entered that fair city. Complaints were made that, especially in the higher education in Sweden, far too much attention was paid to things foreign and not enough to things native; that in the secondary schools—both for boys and for girls, and on both the classical and the modern sides—"the mother tongue" was ruthlessly thrust on one side to make way for other subjects; and that even the linguistic instruction was based, not on the mother tongue, but on German (an experiment is to be made, by the bye, with English as the basic language). The result of these mistakes was a general lack of interest in the mother tongue; a greater or less degree of inability to use the mother tongue effectively, not only in compositions, oral or written, intended for public use, but even in ordinary writing and conversation; and an "amazing ignorance both of the development and life of the language and of the national literature." In "the three kingdoms," as in the United Kingdom, however, the unanimity with which these facts are recognised, and recognised as evils, was matched by the diversity of the remedies proposed. The society could not even agree that "at least five periods a week must be devoted in every class to mother tongue," still less as to what was to be done with the time.

Yet one would think that a fair amount of time and pretty efficient teaching must have been given to "mother

tongue" to enable pupils to tackle effectively such subjects as the following (which were the alternative subjects proposed for the leaving certificate examination at the end of April this year): (1) the Swedish Church in the seventeenth century; (2) ranks and classes in ancient Rome; (3) the significance of the February revolution for France and for the rest of Europe; (4) a character sketch of Gustavus III.; (5) the Swedish Council of State (Privy Council); (6) which of our literary authors attracts you most? (7) the main features of South American scenery; (8) what are the most important evidences of descent of species? (9) the transmission of electric energy; (10) the importance of maritime defence for our country (Sweden).

Alongside this "higher" leaving certificate examination (which qualifies for admission to the universities, and is therefore commonly known as the "Studentexamen") there now stands a kind of "lower" leaving certificate examination intended for those who propose to follow a non-academical career. The pupils for this lower examination are usually two or three years younger or junior to those who strive for the much-coveted "white-cap" of the "student"; and the easier and more "practical" nature of their tests in "mother tongue" stands out clearly from an inspection of the subjects set at the still more recent examination. The alternative subjects were: (1) tell the story of Luther at Worms and in Wartburg; (2) Frithiof's journey to Earl Angantyr—after Tegnér's "Frithiof's Saga" [the great poem partly translated by Longfellow]; (3) what do you know of the history of Sweden under Oscar II.? (4) some account of the iron-fields of Lapland and their utilisation; (5) birds of passage; (6) give an account of some experiment in physics; (7) the dangers of the misuse of alcohol in Sweden; (8) describe a village or a farm in the country.

These two sets of essay subjects at the universal leaving certificate or matriculation examinations at secondary schools throughout Sweden (described and praised by Mr. J. S. Thornton in "Special Reports") may be compared with those set at the final examination at one of the training colleges for primary-school teachers: (1) prayer and its significance in the Christian life; (2) changes of sound in the inflexion of the verb; (3) Pontus Vikner (a prominent Swedish philosopher and pedagogist); (4) the House of Stuart in England; (5) forest management in Sweden; (6) the appearance and habits of the chief weeds found in ploughlands and the means of eradicating them; (7) Gramme's ring; (8) the significance of example in education; (9) the difference between pitch and key in music.

ELEMENTARY EDUCATION IN LONDON.[1]

IN issuing the report by the executive officer dealing with public elementary schools for the year ended March 31st, 1906, the committee directed attention to the magnitude of the educational work of the Council in connection with the elementary education of the children of London. In submitting the present report, attention is directed to its many-sided character. The words "public elementary education" used in the Act of 1870, as interpreted to-day, involve a more comprehensive instruction in elementary knowledge than they were understood to mean at that time. In no way can better evidence of this be found than by a comparison between the Government Code of 1871 and that of 1907. At the former date the compulsory subjects were reading, writing, and arithmetic, with plain needlework and cutting-out for girls. Any other subjects taught were regarded as optional subjects, for which a special grant was paid. Now the Code requires that instruction shall be given in such subjects as drawing, observation lessons and nature-study, geography, history, music, hygiene and physical training, manual training, domestic subjects, and morals. Perhaps the most noticeable development in the work of the schools is that in connection with physical education. The only reference to such instruction in the early Codes was that attendance of boys at drill might be counted as school attendance. The physical education of both boys and girls was considered a matter of minor importance, and the time given thereto was regarded as so much time taken from the purely academic instruction which was considered to be the primary, if not the only, reason for the existence of the elementary school. Now the Board of Education not only recognises courses of instruction in physical exercises which aim at the physical development of the children, but encourages instruction in swimming, and latterly in organised games, such as cricket, football, hockey, &c., for boys, and similar appropriate games for girls.

As in previous reports, a preliminary section is devoted to consideration of the salient features of the year under review. This is followed by three sections on current administration as regards accommodation, attendance, and teaching staff. Then follows a full report by the chief inspector on the educational work as observed by the inspectorial staff. Lastly, there is presented a short review of the examinations which are held by the Council or for which pupils in the London elementary schools are prepared. Various statistics and tables are given in the appendices.

The administration of the decisions in connection with the survey of non-provided schools formed probably the most important feature of the year under review. The work of the previous year was continued—the managers were pressed to satisfy the various requirements, careful consideration was given to the numerous representations which managers made to the Council, and in certain cases the directions were modified after review of all the circumstances. On the whole, the original decisions of the survey were adhered to, and a marked improvement of the structures and general conditions of work in non-provided schools was the consequence. The inspectors report improved state of buildings and equipment, better ventilation, heating, and drainage conditions, small and convenient class-rooms for single classes where formerly there were large rooms with a number of classes under simultaneous instruction, better organised schools, and a greatly improved staff. The full effect of the Council's control of these schools will, of course, not be felt for several years.

As regards staff, it may be remarked that the staff allowed by the Council to the non-provided schools during 1906–7 admitted of 2,208 fully certificated assistant-teachers and 670 uncertificated teachers. The number of fully certificated assistant-teachers in non-provided schools on May 1st, 1904, was 1,168, at the beginning of 1906–7 was 1,580, at the end 1,858. The numbers of uncertificated teachers were at the same three dates: 2,397, 1,775, 1,525. This continuous increase of certificated teachers and diminution of unqualified teachers is very satisfactory, especially if allowance be made for the closed schools. It may be added that a "final staff" (*i.e.*, an upper limit to which managers could raise their staffs if the necessary teachers could be secured) of none but fully certificated teachers came into operation at the end of 1906–7.

[1] "Elementary Day Schools." Report of the Education Committee of the London County Council, submitting a report by the Executive Officer dealing with Public Elementary Day Schools maintained by the Council for the year ended March 31st, 1907. xlix + 103 pp. (King.) 7s. 6d.

While enforcing structural requirements in the non-provided schools, the Council has not been unmindful of the need for keeping its own schools in proper order, and for bringing the older ones up to modern conditions. In addition to the periodical cleaning and painting according to a regular scheme, a large volume of repairs is continuously going on under the supervision of the local clerks of works.

The important question of school organisation received much attention during the year, especially as regards the non-provided schools. The survey revealed the fact that there were many schools in which, owing to the organisation of boys, girls, and infants in separate departments, and the smallness of these departments, effective grading of classes could not be achieved. Departments of three rooms were common, and thus grouping of standards was involved. By combining a boys' and girls' department of this type, and producing mixed classes, each standard could be taught in a separate room and by a separate teacher; and in many cases the head teacher was entirely freed from class-work, and so could devote all his energies to supervision of the teaching and organisation. The grade of the school was frequently raised, and in consequence a more highly qualified head teacher could, when a vacancy occurred, be secured. Where a small infant and a small senior department were combined, continuous control of the curriculum would ensue. The survey involved 141 cases of reorganisation. During 1906–7 all these cases were carefully reviewed, and specific instructions were sent to the managers. In twenty-seven cases it was decided to rescind the requirement, and in twenty cases to postpone action. By the end of 1906–7 seventy cases of reorganisation had been put into operation.

In Council schools the annually authorised staff may be taken as the measure of the teaching power, for there is now no difficulty in securing teachers adequate to the staff so allowed. For 1905–6 the number of head teachers was 1,520, and of certificated assistants 10,404; for 1906–7 the numbers were respectively 1,536 and 10,952. Excluding head teachers, this gives 45·8 pupils to each permanent teacher. It is interesting to contrast with this the corresponding figure 38·8 for non-provided schools. It must be borne in mind that the rooms in non-provided schools are, generally speaking, smaller than in Council schools, and also that there is still a considerable number of uncertificated and supplementary teachers who are only allowed to teach forty-five and thirty pupils respectively, as opposed to the sixty allowed to certificated teachers by the Board of Education regulations. A great improvement has taken place in the proportion of the teachers who are certificated. The Council in consequence was able to authorise the staff of non-provided schools for 1907–8 on the same basis as that adopted for Council schools. The final staff, therefore, consists now entirely of certificated teachers, and in making appointments the managers are always at liberty to rise to the final staff.

As the result of the new scale, the salaries of teachers show a further improvement this year. The average salary of headmasters of L.C.C. schools has increased from £294 on March 31st, 1906, to £299 on March 31st, 1907, and that for headmistresses from £210 to £214. The increase in the case of assistant-masters is from £149 to £152, and in the case of assistant-mistresses from £110 to £111. This increase would have been greater but for the large addition of young teachers at the minimum of the scale. As regards non-provided schools, the average salary of headmasters has increased from £186 to £196; of headmistresses, £120 to £133; of assistant-masters, £95 to £99; and of assistant-mistresses, £65 to £71. It should be noted that about one-third of the assistant-masters and more than half of the assistant-mistresses in non-provided schools are not certificated.

The dearth in the supply of teachers so noticeable in 1904 and 1905 decreased in 1906, and, so far as London is concerned, may now be said to have passed away. The vacancies in L.C.C. schools stood, at July 1st, 1907, at 165, and at December 1st, 1907, at 79. In a service of 12,000, a certain number of vacancies must, of course, be regarded as inevitable in a return prepared at a fixed date. As regards non-provided schools, the vacancies fell from 307 at January 8th, 1906, to 169 at July 1st, 1907.

Curriculum and the methods of teaching the various subjects of instruction were very carefully considered during the year. The question has arisen as to whether the London Education Authority, in virtue of its unique position, should not itself issue publications of a similar nature to those circulated by the Board of Education, and in order to obtain well-considered and practical opinions upon the problem of teaching the various subjects, conferences were convened and have been meeting from time to time. Up to the present, conferences on the following subjects have been called together: English, arithmetic, geography, and drawing. In arranging these conferences, the aim has been to gather together different types of experience and representatives of different points of view. In all cases there have been nominated teachers with practical experience in the elementary schools and in the secondary schools. The academic element has been represented by professors from the various colleges, and recognised experts on the subjects under consideration; and, in addition, a number of lecturers have been chosen from the training colleges.

The principles upon which modern languages should be introduced into the elementary-school system have been carefully considered, and a considerable reorganisation has in this respect been effected. The aim has been to concentrate the work of this type mainly in higher schools. In a few ordinary schools where good work has in the past been done, and where the general attainments of the pupils justify retention, the modern language has also been continued. In eighty-five departments instruction in the subject was discontinued at the close of the year 1906–7, and in eighteen other departments will be gradually eliminated from the curriculum, and a modern language will not be introduced into an ordinary graded school in future unless very exceptional circumstances can be shown to exist. Where the language teaching has been discontinued, the time thus set free has been allotted to English and kindred educational subjects.

The Board of Education Code for 1906 contained as a new feature a reference to moral instruction. It emphasised the importance of moral instruction as part of every elementary-school curriculum, and stated that such instruction might either (i) be incidental, occasional, and given as fitting opportunity arose in the ordinary routine of lessons, or (ii) be given systematically, and as a course of graduated instruction. In the "Suggestions for the Consideration of Teachers" issued by the Board, direct, systematic, and graduated teaching was advocated. The Council has also been urged by the Moral Instruction League to provide systematic moral and civic lessons, and to adopt a definite syllabus of instruction. As a result of the reference to the subject in the Code, systematic moral instruction has been given a definite place in the time-tables of about thirty provided and non-provided schools. The Council has, however, come to the general decision

that the preferable form of imparting moral instruction is the incidental method; but that, as the value of the subject depends mainly on the interest and enthusiasm of the teacher, systematic moral instruction, for which definite provision already has been spontaneously made in the time-table, need not be discontinued during the present educational year.

Another novel feature of the school work during 1906–7 was the playing of games on an organised basis and as part of the general curriculum. This followed as a consequence of the 1906 Code, which introduced, for the first time, such games as an approved part of school work, and in respect of which, therefore, a grant might be allowed. Thus a cardinal principle of the English public schools has now been introduced into the elementary system, and with, so far as may be judged at present, highly successful results. The Council, on December 11th, 1906, sanctioned expenditure of £300 for the supply of apparatus, and accordingly games, as part of the time-table, have been introduced into thirty-four boys' departments, twenty-five girls' departments, and six mixed departments. The last are not, however, "mixed" so far as the games are concerned. The games approved include cricket, football, basketball, hockey, rounders, and a variety of supplemental exercises.

Among topics of interest affecting the administration generally, rather than the immediate school work, it may be noted that the Education Administrative Provisions Bill became law on August 28th, 1907, by which, *inter alia*, the duty of medical inspection of school children, the power of providing bursaries in elementary schools, the power to institute or aid vacation schools and play centres, are given to the local education authority; the Workmen's Compensation Act, affecting 17,000 teachers and 550 school-keepers, came into operation on July 1st, 1907; the whole of the managers of L.C.C. schools (222 bodies) retired on June 30th, 1907, and new appointments to last for a period of three years were made; the question of the admission of the teachers to the Council's Superannuation Fund has been, and still is, under detailed consideration. As regards the Workmen's Compensation Act, the schedule of diseases appended to the Act is limited to what may be termed industrial diseases. A few cases have arisen in which teachers have contracted infectious illness in the schools. In such cases the Council has granted full pay up to a certain limit of time whenever, in the opinion of the medical officer, the cause of disease can clearly be traced to the school.

In concluding the review of the year's work, the question naturally arises, What does London pay for it all? The Education Rate, in respect of elementary education, was for the financial year April 1st, 1906, to March 31st, 1907, 1s. $4\frac{9}{16}d.$ This represented a sum of £2,997,238. It should be explained, however, that both this amount and the rate of 1s. $4\frac{9}{16}d.$ include expenditure on the special and industrial schools. The gross expenditure for the maintenance of the ordinary L.C.C. schools and non-provided schools was £3,002,681, and the receipts from Government grants and other sources £1,331,544. Of this gross expenditure, £2,496,507 was in respect of maintenance of L.C.C. schools and £506,174 for maintenance of non-provided schools.

Elementary Botany. By M. A. Liversidge. 128 pp. (Blackie.) 1s. 6d. net.—This book covers the syllabus of work for the Oxford Junior Local examination. Used to supplement practical work it may be of value; otherwise its very conciseness may be mischievous.

LITERATURE IN THE SCHOOLS.[1]

By J. E. BARTON, M.A.
Headmaster of Crypt Grammar School, Gloucester.

"THE schoolmaster devitalises literature." Such, with your leave, is the brief but bitter text which may serve as a peg for these remarks. I quote the utterance, not because it proceeded from any specially authoritative source—even the penny papers are not invariably right—but because it represents, beyond all question, a consensus of opinion among those people outside our own profession who really care for literature and art.

Our duty is to ask ourselves candidly: "Is it true that the schoolmaster—even the admirable contemporary schoolmaster—devitalises literature, and, if so, why?"

At the outset I think it will be extremely pertinent, even at the risk of some little generality, to inquire what we mean by literature, and to consider whether there is anything peculiar, in the very essence of literature, that exposes the schoolmaster to peculiar peril. By literature, then, I imagine we all mean that class of writing which is concerned, not with any mere record of facts and theories, nor with any purpose of mere instruction—moral, scientific, or technical—but with life in its broader aspects and on its human side. The author of a work of literature, in the meaning of this discussion, is a person who really has an impulse to embody, under the form of essay, poem, fiction, narrative, or what not, his own peculiar sense of the actions, ideas, and feelings that make life interesting or important. A manual of botany is not literature. Most histories of England "for schools" are not literature. A temperance prize story is not literature. We may rule out, in fact, all serious books which are only vehicles for the transmission of particular pieces of knowledge or particular pieces of doctrine, and all unserious books which are concocted with purely commercial motives by professional thrillers, mirth-provokers, or tear-producers. Of course, it is not easy to draw the line. To draw such a line in the abstract is impossible. Offhand, for instance, we might be inclined to fancy that works which deal specifically with political economy, with theology or with physical evolution, would never lend themselves to our strict definition of literature. But we have only to recall a few concrete instances—names like Bagehot, and Newman, and Huxley—in order to perceive at once that even these formidable subjects are capable of yielding, in the hands of genius, literature of a distinctly wide and genuine type. The magic of the writer makes all the difference. This magic we cannot explain, but we can define it in one word. It is Art. The word literature, properly used, denotes the work of a creative artist, a writer who achieves his effect by no exact and logical process, but by personal contact and a pleasurable appeal to our sympathy. He writes for pleasure; pleasure is his medium of communication; we only understand him through pleasure; and pleasure is the sole instrument by which we can induce other people to understand him.

I must apologise for the extreme simplicity of these observations, but I sincerely believe they touch the root of our discussion. I believe that literature in schools has been hitherto a failure because we schoolmasters have persistently forgotten that literature is a form of art, and have persistently treated it as though it were a kind of science. The schoolmaster, of all people, must remember that art and science are on totally different planes. In science the technical expert is naturally supreme. His

[1] Abridged from a paper read at a sectional meeting of the Hastings Conference of the National Union of Teachers, 1908.

opinion is the only opinion worth having. But in a subject like literature the technical expert is a creature to be feared, suspected, and kept severely under whip and chain at every opportunity. Whatever form of art he may single out for his deadly operations he is equally fatal, and if it be true that schoolmasters devitalise literature, it is true no less that music, architecture, painting, and sculpture have suffered more from their own technical professors than from anybody else. The fact is, of course, that a purely technical expert in any art is, properly speaking, not an expert at all. The so-called literary scholar is often nothing more than a useful slave, useful so long as he confines himself to the anatomy of literature, but mischievous when he presumes (on the strength of his anatomical knowledge) to pass a master's opinion on literature itself.

Some of the least imaginative people in the world are authorities on the dates, etymology, allusions and metrical features of Shakespeare's plays. Strangely enough, minds of this order are always highly energetic, and they seem to exert a sort of narcotic enchantment over literature in schools. Succumbing to their influence, we grow indifferent to Shakespeare's own profound, though unconscious, maxim that the play's the thing—the action, the passion, the enthralling spectacle of life. In this respect children often show a great deal more sense than their teachers. So long as they are permitted to follow their own instinct, they read Shakespeare for the story; and this instinct is absolutely sound, because the story was just what interested Shakespeare. The inwardness of the story and its subtle touches escape the child, no doubt; but the broad features appeal to him. He recognises that it *is* a story, that its concern is with life. He understands it, in fact, just so far as he enjoys it. And this is the main point. Schoolmasters must be particularly on their guard against the false terminology which persuades people that a "student" of literature is somehow removed from and superior to those people for whom literature is simply a pleasure. In school, as out of school, literature is only known in proportion as it is enjoyed. All knowledge of art, apart from enjoyment, is false knowledge. Genius can transfigure science into art, but it is only false knowledge that turns art into science. If knowledge in the scientific sense has any function towards literature, it is simply to clear up whatever may obscure or impede our delight in the text.

In dealing with literature for children, therefore, we must take it for granted that reluctance on the part of the pupil defeats everything. Literature in schools, if not pleasurable, is actually pernicious. Notes to school editions, forced upon tender minds, have often inspired a blind hatred of literature. However scholarly are our instincts, we should recognise that in this matter the artistic conscience must often supplant the scholarly conscience; for the artistic conscience demands that everything, if necessary, must be sacrificed to broad and general appreciation of a work as a whole. Our supreme danger is that children may be reduced to the condition in which they cannot see the wood for the trees. Foster early a love of the wood, and close examination of the trees is certain to follow later. It is therefore particularly desirable that for all children, young and older alike, we should rope off some little province of general reading from which all minutiæ such as examiners love are barred. Within this sacred precinct we can cover the ground at a fairly smart pace, snap our fingers at the commentator, and feel for once in a way that the genial author himself is smiling upon us.

At this point some acute critic may observe as follows: "These principles are well enough, but what about practice? The enjoyment you speak of is a thing spontaneous in its very nature. It is therefore entirely beyond the teacher's control. No doubt it is true that Wordsworth's lines, for example,

> 'From old, unhappy, far-off things,
> And battles long ago,'

are lines which no paraphrase can simplify, and offer no foothold for the most desperate professional commentator. It is likewise true that they are pure poetry of supreme excellence. Either you feel them at once or you do not feel them. Where, then—on your own showing—does the teacher come in?"

To this extremely plausible objection the reply would be that everybody who cares for poetry at all can remember moments when the magic of a verse or phrase came in upon him quite suddenly from the mere fact of observing somebody else's delight in it. Nobody can explain, for that matter, how Wordsworth himself produces so powerful an effect by language so simple. The effect is there, none the less; and equally real, if equally mysterious, is that mode of contagion by which the love of literature has been handed on from spirit to spirit through the ages. There is no other way. In children especially, nothing is more remarkable than their quickness to perceive and respond to any mark of sincere and wholly unprofessional interest on the part of a teacher. This is true always, but literature is pre-eminently the field in which they are susceptible to such influence; and I submit that in literature, far more than in the ordinary school subject, success depends on catching the creature young. No doubt the Wordsworth quotation is an extreme instance. I suppose there will always remain a whole army of people—men and boys, the matron and the maid, including some teachers—for whom pure poetry is too pure to have any effect whatever. But when we come to plays like "Henry V." or "The Merchant of Venice," treated in broad outline, or to prose literature of action like Lamb's "Ulysses," or to first-rate poetry of incident like the "Pied Piper," the power of a teacher to communicate literary pleasure is measurable simply by his own enthusiasm. Nothing is more hopeful than the number of excellent editions of creative prose works, more or less without notes, and the almost equally good anthologies of verse (much of it modern and copyright) which can now be bought for a few pence apiece. The keen teacher had never such an opportunity. These huge masses of young children, however unpromising their home environment, consist after all of little individuals; each susceptible to a story plainly told, each of them willing to laugh or to be pleasantly terrified, each with its own tiny grain of imagination. We may not be able to convert them to Shelley, but we need not despair of weaning them from "Ally Sloper," nor even of diverting to higher uses an incipient craving for "Sunday Stories" and "Forget-Me-Not." I feel that this is not only a scholastic question, but a question which concerns the moral marrow of the country. We live in an age when a vast multitude of people is insensibly being vulgarised in thought and imagination by a deliberately and cynically organised system of cheap sensation and sentimentalism. Every teacher should ask himself, with a sense of responsibility: "Am I going to let slip an opportunity which was seized long ago by the Amalgamated Press?"

I venture to offer three suggestions which cannot all lay claim to novelty, but deserve, I think, to be

emphasised. The first is that, in connection with literature, the teacher might use his own voice to much more purpose than at present. Everybody knows that print, for many children, is an obstructive medium at best. Natural poetry and legend—the poetry and legend of imaginative races like the Celts or the early Greeks, whose art was "popular" in the strict sense—were spoken, not written, and the instinct survives more or less in all children. Quite apart from the necessary reading aloud which children have to perform by themselves, I think a teacher can do much for literature by sometimes reading personally to his class, or, still better, by occasionally offering it a continuous narrative in his own words—the narrative, for example, of the "Odyssey." In either case he should make his story as dramatic as possible in a quiet way, but should rigidly exclude all theatrical declamation and everything which might suggest an attempt to edify.

The second suggestion has to do with the vastly important matter of books for home reading. That every school, or (far better) that every class, should have its own little collection of such books would seem an almost superfluous recommendation at a time when so many of them can be bought, well printed, for sixpence, and rebound in buckram for less than a shilling. My point rather concerns the selection of these books, and I hope it will not seem harsh or presumptuous if I say that the selection of books which compose most school libraries, and particularly of the books which are usually given away as prizes, seems to me incredibly and unspeakably absurd. I am not talking of reference books, but of books which are given out to be read, and are supposed to be read for profit in the guise of pleasure. Allow me in this matter to exercise a little frankness. Is it not true that every age—in a measure, every decade—has a language of its own? that some mental effort is required to adjust oneself to the style and atmosphere of most books which are fifty years old? And if even we older minds are conscious of this truth, does it not apply with much more force to youthful minds? Exceptional children, I daresay, read through Dickens, Scott, and Thackeray without tedium in their early teens. Of children who are not exceptional, however, great numbers have no opportunity to read at all, many read anything so long as it mentions Red Indians, and some—usually the victims of misguided parents—are brought up on that tearful and unctuous type of story which publishers describe as "wholesome" and may comprehensively be defined by the word "slop." Teachers must cater for the generality; our duty is to get every boy to read, and this will be brought about, not by vaguely advising him to read "Guy Mannering," but by thrusting into his hands something which is thoroughly and immediately exciting and enjoyable, which, if not yet installed in classic rank, is at least a work of talent and a starting point from which he can push up, enjoying the progress at every step, to things more difficult. At a certain age the taste for pirates is a thoroughly sound taste, and it is our duty to take advantage of its existence. Every teacher, in drawing up his list of books, should apply to each book individually these searching tests: (1) "Is this a book which I myself, when I am rather tired and wish to be amused, can enjoy, honour bright and without humbug?" (2) "Is this book likely to hold the attention of the normal boy?" (3) "Is it a book of sound workmanship, and one which would be awarded some degree of artistic merit by any competent judge of current literature outside the scholastic profession?" Such tests, applied with intelligence and sincerity, would result in something very different from the customary selection. It would be perceived, for example, that stories like "The White Company" and "Rodney Stone," "Treasure Island" and "The New Arabian Nights," are more likely to capture and sustain the attention of contemporary children than the majority of Scott's novels or any of Kingsley's; that any tale by Talbot Baines Reed is superior, for our purpose, alike on literary and on moral grounds, to "Eric; or, Little by Little"; that really creative books, such as "Wild Animals I Have Known" or "A Year with the Birds," the "Just So" stories, or the "Jungle Books," are far more likely to stimulate an affection for Nature than the kind of book which is called "Half-hours with the Insects"; that tales of genius like "The First Men in the Moon" or "The War of the Worlds" will quicken the scientific imagination in a sense wholly foreign to those dreary and illiterate compilations bearing titles like "Peeps into Starland" or "Little Engineers," which journalistic hack writers turn out in shoals for the unwary or ignorant purchaser of school-library volumes. As reading for girls, it would be perceived that "Cranford" and "Jane Eyre" are no less cheap, and no less entertaining, than works like "St. Elmo" or "Barriers Burned Away." Indeed, the case of girls' reading is even more crying than that of boys. Most teachers tacitly assume that nothing is fit for the private reading of schoolgirls but amiable twaddle. They forget that nothing is more terribly and insidiously demoralising than the sort of story which editors think "suitable" for magazines of the pious-domestic order: demoralising because it imperceptibly weakens the very fibre of the mind and reduces that clear, fresh outlook upon life which should be every child's birthright to a petty and feeble convention. Literature has no object, as I understand it, but to quicken and widen one's interest in life itself. If children are to be turned towards literature in this sense we must choose books which will develop the natural imagination. This is important. There is such a thing as false imagination, an imagination which mistakes the theatrical for the dramatic, an imagination the world of which is pasteboard, the persons of which are puppets, and their passions sawdust. The child's natural desire for a tale is the outcome of its interest in actual things and people. If we give it books which are sentimental and third-rate, we commit the sin of offering a stone for bread: we pervert a fine natural instinct into a vulgar artificial taste.

In choosing literature for youthful home consumption, then, we must boldly fling aside all traditions about the so-called classics and the hundred best books. We must devote a great part of our attention to contemporary work, recognising that we have to start with the contemporary child as he is. And we must examine with suspicion every book which is manufactured with the trade-mark "juvenile" or "popular"; every book which is aggressively "moral"; and every book which belongs to any series of "Half-hours" or "Peeps" or "Stories from So-and-So" or "Quiet Talks."

This brings me to my third suggestion. If school literature is to be genuine literature, and if genuine literature is simply one of the many modes of art in which life has been interpreted, it seems to follow inevitably that great advantage is to be got by putting before the child's mind, as patently as possible, the affinity of literature and those other forms of expression. School walls, in most towns where finances permit, and where art is not looked upon as a trivial luxury, already have pictures; the point is that they should have pictures (or rather, again still better, that each class-room should have its own pictures) really com-

mensurate with the standard we aim at in these matters. A photograph of a masterpiece costs no more than any other photograph. A few weeks ago I saw by accident a collection of admirably executed photographs which had been officially ordered for schools in an important English city. They were photographs of pictures, and I think I may say quite fairly that nobody with the slightest knowledge of art could hope to encounter a more puerile exhibition. To spend money on such things was no other than an expensive method of corrupting the child's eye. What is the use in schools of applying Shakespeare or Wordsworth, Malory or Stevenson, to the mind if the eye is to be greeted by the effusions of some Academician whose talents really lie in the direction of coloured Christmas "supplements"? It is surely a little incongruous to festoon our class-room walls with subjects of beggars on door-steps, children feeding puppies, and maidens with bunches of flowers, rendered as these things are rendered by the popular picture-mongers of the day. If someone says that the picture on the wall does not matter, my reply is, "Why put it there at all?"—and also, that if pictures do not matter books do not matter. If he goes on to say that pictures of the sort I describe are only intended for decoration, I reply further that "decoration" is a horrible word, and that the notion it popularly implies is the source of every vulgarity, in matters of taste, with which we have to contend. It is, of course, understood that I speak of pictures which are hung as pictures simply. Diagrams and historical illustrations are another matter, and do not here concern us.

In all that has been said I take one principle for granted—namely, that a child's taste in literature and art, so far as it has taste, is not bad. On the contrary, all natural taste is good. When we say popular taste is bad, we really mean a bad taste which has been artificially manufactured by commercial conditions and artificially exploited by commercial enterprise. Such conditions and such enterprise it is our duty as teachers to resist incessantly. Hitherto, unfortunately, our resistance has not been very strenuous, and we have given a whole generation's start to every form of inanity and sensationalism.

CAMBRIDGE UNIVERSITY LOCAL EXAMINATIONS.

SET SUBJECTS FOR JULY AND DECEMBER, 1909.

RELIGIOUS KNOWLEDGE:—*Preliminary.*—(*a*) St. Matthew, xv. to end, or (for Jewish students only) Ezra and Nehemiah; (*b*) I. Kings ix. to end.

Juniors.—(*a*) St. Matthew, or (for Jewish students only) Ezra, Nehemiah, Haggai; (*b*) I. Kings; or (*c*) The Acts of the Apostles i.–xv.

Seniors.—(*a*) St. Matthew, or (for Jewish students only) Ezra, Nehemiah, Haggai; or (*b*) The Acts of the Apostles i.–xv.; (*c*) I. Kings; or (*d*) Thessalonians I. and II.

ENGLISH LANGUAGE AND LITERATURE:—*Preliminary.*—(*c*) Lamb's "Tales from Shakespeare" ("A Midsummer Night's Dream," "The Winter's Tale," "Much Ado about Nothing," "Macbeth," "The Comedy of Errors," "Othello"); or (*d*) "Tennyson for the Young" (Macmillan), pp. 20–80.

Juniors.—(*b*) Shakespeare, "Julius Caesar"; or (*c*) Scott, "A Legend of Montrose"; (*d*) a paper of questions of a general, not a detailed, character on Prescott's "Conquest of Mexico," ed. Horsley, published in two volumes and also in a single volume (Rivington), and "Historical Ballads" (Cambridge University Press), pp. 95 to end.

Seniors.—(*b*) Shakespeare, "Julius Caesar"; or (*c*) Spenser, "Faerie Queene," Book I. (Clarendon Press); (*d*) a paper of questions of a general, not a detailed, character, on Shakespeare, "Richard II.," Tennyson, "The Marriage of Geraint," "Geraint and Enid," "Gareth and Lynette," and either Bacon's "Essays," 29–46, or Gibbon, "Decline and Fall of the Roman Empire," chapters i.–iii. (omitting the notes).

HISTORY, GEOGRAPHY, &C.:—*Preliminary.*—History of England. The paper will consist of three Sections on the periods (i) 1066 to 1485, (ii) 1485 to 1603, (iii) 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 (i) 1066 to 1509, (ii) 1509 to 1688, (iii) 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. (*b*) Outlines of the History of the British Empire from A.D. 1763 to A.D. 1878. (*c*) Outlines of Roman History from B.C. 264 to B.C. 133.

(*d*) Geography. The United Kingdom of Great Britain and Ireland, and Australasia.

Seniors.—(*a*) History of England. The paper will consist of three Sections on the periods (i) 55 B.C. to 1509 A.D., (ii) 1509 to 1714, (iii) 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. (*b*) History of the British Empire, as for Juniors. (*c*) Greek History, B.C. 510 to B.C. 432.

(*d*) Geography. The paper will consist of four Sections on (i) Great Britain and Ireland, (ii) Europe, (iii) America, South of Mexico, (iv) Australasia, respectively. Candidates may select questions from all four of the Sections, or may confine themselves to any three or any two.

LATIN:—*Preliminary.*—Welch and Duffield, "Invasion of Britain" (Macmillan).

Juniors.—(*a*) Caesar, "de Bello Gallico," IV., 20–36, V., 4–23; (*b*) Caesar, "de Bello Gallico," V., 25–58; (*c*) Virgil, "Aeneid," XI., 1–444; (*d*) Virgil, "Aeneid," XI., 445–915.

Any two of these four to be taken.

Seniors.—Livy, XXII., 1–51; or Cicero, "pro Milone." Virgil, "Aeneid," XI.; or Plautus, "Trinummus."

GREEK:—*Juniors.*—(*a*) Xenophon, "Anabasis," II., 1–3; (*b*) Xenophon, "Anabasis," II., 4–6; (*c*) Sophocles, "Scenes from the Antigone," 1–367 (Clarendon Press); (*d*) Sophocles, "Scenes from the Antigone," 368–711.

Any two of these four to be taken.

Seniors.—Herodotus, vi., 61 to end; or Plato, "Crito and Euthyphro." Homer, "Iliad," IX., X., 1–298; or Sophocles, "Antigone."

FRENCH:—*Juniors.*—Malot, "Remi et ses Amis" (Cambridge University Press).

Seniors.—Molière, "Le Bourgeois Gentilhomme"; Erckmann-Chatrian, "Madame Thérèse."

GERMAN:—*Juniors.*—Andersen, "Eight Stories," omitting "Ib und Christinchen" (Cambridge University Press).

Seniors.—Schiller, "Die Jungfrau von Orleans"; "Goethe's Boyhood" (Cambridge University Press).

HISTORY AND CURRENT EVENTS.

THE retirement of Sir Henry Campbell-Bannerman from office made a great commotion this spring. There was a general redistribution of offices, and we had another illustration of the fact, pointed out long ago by that Prof. of Things-in-General, Mr. W. S. Gilbert, that to qualify for the post of "ruler of the King's navee" the great requisite is an absolute ignorance beforehand of the entire subject. The redistribution has also given rise to other quaint illustrations of our "glorious" constitution. Some seats in the House of Commons have been vacated because their holders have been made peers. That is not strange. But others are vacant because their holders have been thought worthy of sharing in the administration of the country's affairs. Mr. Winston Churchill found the inconvenience of this ancient and now absurdly obsolete rule. It was made when the whole House was supposed to be guardians of the nation's "liberties" against a dangerous king. No one holding "a place of profit under the Crown" could be a member of the House. So ran the original regulation. But it was modified to the illogical compromise which still obtains.

OUR cousins in America are at any rate more logical. They were told by Montesquieu in his "Esprit des Lois" that in England the "powers" executive, legislative and judicial were separate, and that it was good to have them so. As they wished to have a constitution as much like that of the mother country as possible, only with some "improvements" which were then being advocated here, they made their King-President and his Cabinet quite independent of the Congress. The consequence is that the President might change the whole Cabinet without interfering for a moment with the work of the Congress. The ministers are responsible to the President for their conduct of affairs, and the President in turn is responsible directly to the "people" who elect him. Here, the ministers are in one sense responsible to the House of Commons, and in another sense, as some of them have recently found, to their local constituents, whose votes are swayed by considerations of all kinds but the suitability of the new minister for the post to which he is appointed.

THERE has lately come into our hands a document sent by a student of history and current events. The current event of interest to Prof. Gaston-E. Broche is the *entente cordiale* between Great Britain and his country, and the history which he seeks to connect therewith is the series of events in Franco-German history which begins with the battle of Bouvines (1214) and ends with the Franco-Prussian War of 1870–1 and its consequences. His pamphlet consists of questions which he addressed to a German professor on these matters, the answers of his correspondent, the opinions on the same subjects of other German writers, and his own comments. Into the vast subject of the relations between France and Germany for the last seven hundred years we do not, of course, propose to enter. But it is curious that anyone should wish to provide arguments in favour of an understanding between France and Great Britain by attempting a justification of French action in these old and yet unfinished controversies.

THE *entente cordiale* (why do we call it by a French name?) to which we have just referred is gaining illustration this year in concrete acts. We do not refer so much to the Franco-British Exhibition which is taking place in London this summer as to the celebrations which are to take place in Canada. In that Dominion, as we all know, there live side by side, under the British Crown, a French as well as a Brito-Irish population. Since the beginning of Victoria's reign those peoples have learned to live peaceably together, and many of us remember the enthusiasm with which Sir Wilfrid Laurier, a "Frenchman," was welcomed in London eleven years ago. Now the Canadians are going to dedicate the Heights of Abraham to public use as a memorial to Montcalm and Wolfe, who fought there in 1759. Old quarrels are not forgotten but glorified in a common memory. When will it be possible to have a similar dedication of (say) Naseby field with a joint monument to Charles I. and Oliver Cromwell?

ITEMS OF INTEREST.

GENERAL.

MR. MCKENNA'S Education Bill was read a second time on May 20th. The amendment for the rejection of the Bill was negatived by 370 votes against 205. The speeches during the second reading debate do not leave us very hopeful as to the future of the Bill. Everything would seem to depend upon the concessions the Government is prepared to make in committee. Mr. Balfour maintained there is nothing to show that the Government is not going to press on the Bill without modification. Mr. Asquith, however, expressed willingness to listen to any suggestions that may be made for effecting alterations under which generous facilities for the continuance of special religious teaching in Anglican schools can be assured, provided the amendments are not inconsistent with the fundamental principles of the Bill. He defended the contracting-out clauses, which have been condemned by the National Union of Teachers, and made an earnest appeal to the House of Commons to facilitate agreement. We have no concern with political partisanship; our desire is for educational efficiency, and this is being hampered and delayed by the unseemly bickerings about a "religious difficulty" which is real only outside the schools. It will be little short of an outrage upon common sense if it should again prove impossible to compromise differences of opinion upon questions which are largely non-educational. Having once settled these matters in connection with religious teaching, it will be possible to proceed with the important work of education.

THE House of Lords refused on May 12th "to read a second time" a Bill the object of which was to make thirteen the minimum age at which a child can be exempted from the obligation to attend school. Lord Stanley of Alderley, in moving the second reading, pointed out that, except in the textile districts, there is practically no half-time system, and figures rather go to show that where "half-timers" exist the fact is not a necessary condition of industry, even in the textile trades. The Archbishop of Canterbury blessed the Bill; he said we are taking away from school the children of the poorer and the less cultured class at the very age when our own sons are beginning their education. Lord Tweedmouth and the Earl of Crewe, on behalf of the Government, were unable to agree that the Bill was necessary just now. Thus another opportunity was lost of improving the education of this country and of bringing it a step nearer to the condition of things in Continental countries. When Scotland seems in a fair way to ensure the education of her boys and girls up to seventeen years of age, it seems pitiable that "a very considerable amount of inconvenience, especially to the agricultural interest, to the cotton interest, and to some extent to the woollen interest"—to use the words of Lord Tweedmouth—should be allowed to weigh

for one instant against the broad national interest of educating properly all children so that they may have a chance to become eventually useful and intelligent citizens.

THE second annual conference of the Association of Teachers in Technical Institutions will be held in London on June 6th to 10th. Among the subjects to be discussed may be mentioned: group courses and continuation schools, homework and tutorial classes, the schools and the decorative arts, and trade and technical schools. Full particulars of the meetings can be obtained from the honorary secretary, Mr. J. Wilson, 37, Park Mansions, Battersea, S.W.

THE annual conference of the Association of Headmistresses will be held on June 19th and 20th at the High School for Girls, Manchester. The president, Mrs. Woodhouse, will take the chair.

ARRANGEMENTS have been made by the Educational Handwork Association to hold again this year summer courses in handwork subjects at the Municipal Secondary School, Scarborough. The classes will meet from July 27th to August 22nd, and appear to cover the whole range of handwork. Teachers may obtain practice and instruction in woodwork, metalwork, modelling, woodcarving, art needlework, and laboratory arts. Full particulars, with a list of the teachers, can be obtained from the secretary of the association, Mr. J. Spittle, 47, Spring Street, Huddersfield.

A VACATION course for teachers of young children will be held at the Froebel Educational Institute, West Kensington, during the first fortnight of August. It will include lectures on child nature, methods of teaching, development of civic life, and nature-study. Illustrative material will be found at the Franco-British Exhibition and also at the exhibition of the Congress for the Development of Drawing and Art Teaching. For practical illustration a demonstration class of children will be held and expeditions arranged. For prospectus apply to the secretary, Miss M. E. Findlay, Briar Cottage, Leigh-on-Sea, Essex.

IN connection with Empire Day, the London County Council arranged a special programme in their schools for May 22nd. Nearly 800,000 London children received appropriate "Empire Day" lessons from 9 to 11 in the morning; at 11.30 the flag was saluted and patriotic songs sung, and at 12 the head teacher of each school gave an address on the Empire and the Union Jack. Besides these school celebrations, many others were held on May 23rd and 25th, both in London and the provinces. In many country districts old Army and Navy men helped in the celebrations. The afternoons were in London and the country generally kept as holidays. In the colonies the day was marked by enthusiastic demonstrations, the numbers taking part in the commemoration in different parts of the Empire running, according to the *Times*, into millions. The League of the Empire has every reason to be proud of the result of the consistent efforts which it has made to familiarise British peoples with the idea of celebrating an Empire Day.

A FURTHER stage in the preparations for the third International Congress on Art Teaching was marked by the preliminary exhibition of drawings from London secondary schools, opened on May 8th by the Master of the Skinners' Company, Mr. Arthur T. Marson, in the Skinners' Hall, Dowgate Hill, London. In the course of an address, Miss Newton, headmistress of the Skinners' Girls' School, emphasised the value of drawing as a factor in the scheme of general education, particularly in the light of its relation to other subjects. Prof. Beresford Pite and Miss Collins, who also spoke, dealt with the immediate aims and aspirations of the coming congress, and with the opportunities it would present for comparison of methods of instruction, with special reference to their possible bearing on art as applied to industrial purposes, in which respect it is considered that we shall have much to learn from the exhibits of our Continental rivals. The drawings on view in the Skinners' Hall, representing the work of some twenty secondary schools, gave ample evidence that the subject is here, at any rate, treated as one of vital and absorbing interest, and that as a means of quickening the observation and of affording a means of graphic expression it is, in many cases, most adequately fulfilling its mission. The opportunities in a secondary school for demonstrating the application of drawing to the artistic crafts are necessarily very limited, but that serious attempts are being made in this direction was apparent in the examples of needlework, lace-making, embroidery, and stencilling from several of the girls' schools, notably from the Skinners' School, Battersea Polytechnic Girls' School, St. Saviour's Grammar School for Girls, and the Princess Helena College. We are informed that the exhibition of drawings and art work in connection with the congress will be held in galleries at the South Kensington Museum, whilst the conferences will take place in the large hall of University College.

THE annual conference of the National Association of Manual Training Teachers was held at Westminster during the Easter holiday, when Mr. J. G. Edwards, head of the engineering side of the Leeds Higher Education Department, presided. The annual report which was presented stated that the membership during the year had reached 814. Sir John Cockburn delivered his presidential address, and said that manual training is now recognised as an essential part of education. Movement, he pointed out, precedes every other function in life, and to appeal to the brain otherwise than through the muscles is to put the cart before the horse. Sir William Mather, who spoke later, said he should like half the school time in every week to be devoted to manual work and elementary science. He gave a number of interesting particulars with regard to the practical value of manual training, and said that at the Gordon College at Khartum remarkably successful results have been obtained in the teaching of the young Sudanese by this system of education. Papers were read by Mr. J. Arrowsmith on the education of the future, and by Mr. Binns on the meaning of accuracy. The executive council of the association has arranged, we notice, a summer course in handwork and pedagogy, which is to be held at the Municipal Technical College, Brighton, from July 27th to August 22nd. The individual requirements of each student will receive special attention, and lectures on theory are being organised under the university extension scheme.

IN a note in our April issue (p. 152) we referred to the excellent provision made by the Department of Public Education for the Cape of Good Hope in the way of vacation courses for teachers, both of a general and special character. We are informed by a Cape Town correspondent that, unintentionally, we have been unfair to the Education Department by using the expression "the practice of holding vacation courses for teachers is being adopted in South Africa." We are glad to add that, as a matter of fact, vacation courses for acting teachers have been in operation in the colony for fifteen years, and

have had a marked effect in increasing the qualifications of those teachers who had entered the profession without previous training. After the general courses had been carried on for some years, attention was directed to the teaching of special subjects, and since that time both general and special courses have been held simultaneously. The total number of teachers who have been admitted to vacation courses exceeds five thousand.

FOLLOWING a recommendation of the City of London School Committee, the Court of Common Council of the City of London has adopted the following resolution: "That to commemorate the great distinction gained by the Right Hon. H. H. Asquith, M.P., a former pupil of the City of London School, and the honour thereby conferred upon the school by his appointment as Prime Minister, this Court do award a scholarship of £100 per annum, to be known as 'the Asquith Scholarship,' for boys of the City of London School proceeding direct to either Oxford or Cambridge University, and tenable thereat for three years—to be extended for four years in any case recommended by the headmaster and approved by the committee—and that it be referred back to the committee to carry the same into execution."

A COUNTRY IN TOWN EXHIBITION is to be held again this year at the Whitechapel Art Gallery, and will be open from July 2nd to July 16th. Admission will be free. An attractive programme has been arranged, and the assistance of many expert helpers secured. Shows of plants grown by school children, a model roof garden, specimen window-boxes, a model school garden, maypole and other flower dances, and models for laying out roof playgrounds and school yards are instances of the attractions to be offered. A representative committee has been formed, of which the Rev. Canon Barnett is chairman, and Mr. H. E. Turner, 1, Grosvenor Park, Camberwell, S.E., honorary secretary. The committee appeals for donations to the expenses fund, and for help from teachers and others interested in the nature-study movement.

LA LIGUE FRANÇAISE DE L'ENSEIGNEMENT of Paris has made arrangements to hold from October 1st to 4th next in Paris the second International Congress of Popular Education. The first congress, held in Milan in 1906, met with much support, and it is expected that the October meetings will bring together educationists of many nationalities for discussion and an exchange of opinions. Among questions which are to be dealt with in Paris may be mentioned: associations for the encouragement of public education; popular lectures and public libraries; the education of girls in housecraft; education for the professions; and foreign visits by teachers for the study of educational problems. Full particulars concerning the congress may be obtained from M. Léon Robelin, general secretary, la Ligue française de l'Enseignement, 16, rue de Miromesnil, Paris.

MISS WALTER is arranging a holiday in Switzerland again this year which should prove useful to women engaged in professional work. The holiday, which is for a fortnight or three weeks, begins on August 4th, the time being divided between Grindelwald and Reuti. Grindelwald is between 3,000 feet and 4,000 feet above sea-level, and is a famous centre in the high Alps. Reuti, near the top of the Brünig Pass, overlooks Lake Brienz, and is noted for its beautiful sunsets. Second-class carriages will be reserved from London, and comfortable hotel accommodation will be provided. The tickets are available for twenty-five days, so that those who wish to make a break at Paris on the return journey can do so. The cost will be ten guineas for the fortnight or thirteen guineas for three weeks. Application should be made as early as possible, as the party is limited in number and the hotels fill early. Further particulars can be obtained from Miss Walter, 38, Woodberry Grove, Finsbury Park, London, N.

FROM the last quarterly report of the Education Committee of the Leicestershire County Council, we learn that the committee has resolved that, after December 31st next, an annual examination and inspection by, or under the direction of, a university shall be required of all public secondary schools which are maintained or assisted out of the county education fund. An annual examination and inspection conducted by the Examination Delegacy and Syndicate of the University of Oxford or Cambridge will be accepted as fulfilling this requirement. The cost of such examination and inspection is to be defrayed directly by the governors. In cases where such arrangements are not made with either of the above-mentioned universities, there is to be an annual examination and inspection under the direction of the University of Birmingham. The annual examination and inspection of the University of Birmingham may be supplemented by occasional visits to the school made by the professor of education in the University. As the Birmingham University examination will satisfy the requirements of the Schemes established by the Board of Education, and will consequently relieve the Governors of any expenditure connected therewith, the annual cost of the same, being in the first instance defrayed by the committee, will be deducted from the maintenance grants payable to each school by the local education authority.

FOR fifteen years the primary-school teachers of New Zealand had been agitating for a superannuation scheme, and on January 1st, 1905, there came into operation the "Teachers' Superannuation Act." Certainly the provisions of the Act are not very liberal, but a start has been made. The principal provisions of the Act are: (i) All teachers entering the profession subsequently to the passing of the Act must contribute; (ii) the rates of contribution are 5 per cent. of salary if the contributor is under thirty years of age at the time of joining, 6 per cent. if between the ages of thirty and thirty-five, 7 per cent. if between the ages of thirty-five and forty, 8 per cent. if between the ages of forty and forty-five, 9 per cent. if between the ages of forty-five and fifty, and 10 per cent. if more than fifty years of age; (iii) male contributors *may* retire from the education service at the age of sixty and *must* retire at the age of sixty-five, while women contributors *may* retire at fifty and *must* retire at sixty; (iv) the benefits are one one-hundred and twentieth of total salary earned previous to the passing of the Act, *plus* one-sixtieth of total salary earned subsequently to the passing of the Act: the minimum retiring allowance is £52 per annum; (v) all in any way engaged in connection with the public education service may become contributors; (vi) some provision is made for the widows and children of contributors. The benefits derived from the scheme are considerably less than those granted to retired railway or police officials, but it is hoped that eventually either the rates of contribution will be decreased or that the annuities will be increased.

WE have received a copy of the annual report of the superintendent of education of the public schools of Nova Scotia for the year ending July 31st, 1907. It is quite clear that the educational affairs of this province are progressing satisfactorily. Acts have been put into operation

during the year authorising (i) the periodic dental and general medical examinations of pupils attending school, and (ii) retiring annuities to teachers who have served thirty-five years, or thirty years on the attainment of sixty, or who become totally disabled after a service of at least twenty years. Nova Scotia shows the largest attendance at school, for the population, of any country in the world, according to a recent United States report, and we notice that in 1907 it possessed 2,465 public schools, with 100,000 pupils. Classical readers will be interested to learn that while the number of pupils in the high schools increased by only seven, the number of those taking Latin increased by 228. Taking the population of Nova Scotia at 460,000, and of Prussia at 35,000,000, and the students in all grades of the Gymnasia and Realgymnasia of Prussia as taking Latin, a larger proportion of the population in Nova Scotia is studying Latin in any given year than in Prussia.

WE learn from the *Education Gazette* of Cape Town that, mainly through the instrumentality of Mr. J. G. R. Lewis, principal of Mowbray Public School, a Classical Association for South Africa has been formed. Prof. Ritchie has been elected president, and Mr. Lewis honorary secretary. Considerable support from colleges and schools appears to be forthcoming, and every encouragement will be well deserved if the two principles mentioned by Prof. Sonnenschein (honorary secretary of the Classical Association) in his letter are followed: (1) the maintenance of classical studies in an important position in the South African schools, but with due regard to the claims of other subjects, and (2) the improvement of methods of teaching.

THE Australian correspondent of the *Lancet* reports that the Education Department of Victoria has recently made a great feature of "nature-study" for children in State schools. At Beechworth, a country centre, enteric fever has been very prevalent of late, and the local health officer, in a report on ten cases coming under his notice, remarked: "In several of the cases I have found that the sufferers had been hunting for tadpoles in the dirty pools of Spring Neck and Holme's Neck, which are nothing but collections of sewage of the filthiest type. This is part of the 'nature-study' which is at present one of the fads of the Education Department. But I should say that a little study of the local sanitary conditions would be of much greater advantage to both the rising generation and their teachers." Copies of the report have been forwarded to the Board of Public Health and to the headmaster of the school.

SCOTTISH.

THE critical stage of the Education (Scotland) Bill has been successfully passed. Previous Bills have usually failed to get as far as the second reading, and when they did the opposition threatened had been sufficient to bar further progress. The 1908 bantling has been more fortunate. It passed its second reading without a single note being struck of factious opposition. The failure to give extended areas was commented on by speaker after speaker on both sides of the House, but in the circumstances it was accepted as inevitable. The most notable features in the debate were the full knowledge of educational affairs shown by all the speakers without exception, and the genuine sympathy expressed for those engaged in carrying on the work of education. The superannuation and tenure clauses were heartily welcomed, and the only ground of complaint was that they did not go far enough. It was quite evident that an attempt would be made in committee to make the clauses more generally operative than they promised at present to be. Sir Henry Craik and Mr. Cathcart Wason in particular showed that rural teachers would not be likely to derive much benefit from the superannuation clauses unless some attempt was made to deal exceptionally with their case. If this defect in the Bill can be met, it is safe to say that these two clauses will do more to raise the status of the teaching profession than any other measure ever passed. The only other noteworthy feature in the discussion was the strong note of criticism, and even hostility, towards the Department. "Autocracy" and "bureaucracy" were words that appeared in every speech. Even Sir Henry Craik feared the bureaucracy of the Department in dealing with the universities. The love of symmetry and the passion for governing every grade of schools by a uniform code, that mark the Department, have been assailed in these columns again and again. All the same, justice requires that it should be recognised that much of the present cry against the Department has been raised by those who are educational defaulters, and have been compelled to do their duty by a wisely despotic Department. Teachers, at any rate, have much to thank the Department for in the past, and when that body is being assailed on all hands they should speak up strongly in its defence.

THE governing bodies of the various Scottish universities have been greatly exercised over the proposal in the Education Bill to pay grants to universities. They are all naturally desirous to have the grants, but they greatly fear the giver. *Timeo Danaos et dona ferentes.* They fear the gifts of the Secretary of State for Scotland because they see behind him the grim figure of the Department. They foresee the day when they may be governed by a code and examined by an inspector. Edinburgh University Council states that it views with apprehension the very vague terms of the reference to the investigations to be made by the Secretary for Scotland before grants are paid. Glasgow University Council takes up pretty much the same attitude, and demands that safeguards should be given against Departmental interference. Mr. Sinclair, Secretary for Scotland, has written to Sir Henry Craik assuring him that no Departmental interference need be feared, and that the investigations referred to shall be undertaken by a committee such as examines into the necessities of the new English universities. This is reassuring provided only the committee is satisfactory. But the committee may be a Departmental one, and against this the universities will protest strongly. If an assurance can be given that this committee will be an independent and impartial one, no doubt it will at once be accepted.

THE visit of Dr. George Kerschensteiner, director of education, Munich, to Scotland, has aroused much interest owing to the proposals in the Education (Scotland) Bill to extend the leaving age to seventeen years. Dr. Kerschensteiner has for years administered and carried as near perfection as possible a compulsory day or evening school course up to seventeen years of age. Addresses were delivered at Edinburgh, Glasgow, and Aberdeen, and large audiences gathered in each centre to hear how compulsory continuation schools worked abroad. Dr. Kerschensteiner explained that manual training, and not book training, was the basis of the curriculum, and the course was framed to bear as directly as possible on the occupations of the individual pupils. The co-operation of trade unions and employers of labour had been welcomed, and much of the success of the system was due to this assistance. Lessons in civics were given in every class, and every

effort was made to awaken the young students to the duties and responsibilities of citizenship.

A VERY important memorandum has been issued by the Scottish Office to explain the provisions of the Education (Scotland) Bill. It cannot be said that this is altogether unnecessary, as there has been much conjecture in regard to the precise bearing of certain of the financial clauses. The memorandum states that the Bill makes no change in existing authorities for education, nor does it propose to effect any fundamental change in the existing educational system. Its aim is to amend and improve the present machinery, and to make a further advance in the education of the young. It appears that under the Bill the Consolidated Education Fund will amount to £403,000. Educational objects of a national importance, such as cannot be considered to be a proper charge upon the rates of any one district, are to be a first charge upon the fund. The balance is then distributed among the various districts. But here a new and welcome principle comes in. This balance is not to be distributed according to population or valuation as hitherto. It is to be allocated *directly* according to expenditure, and *inversely* according to valuation. In this way larger grants, proportionately, will go to the poor and sparsely populated districts than to the populous centres. This is an eminently fair principle to proceed upon, and the Scottish Secretary is to be congratulated on breaking with precedent to introduce it.

THE Art Committee of the newly established Edinburgh College of Art has prepared a statement with reference to the origin of the college, its aim and scope, the qualifications and duties of a director, and other details. From this statement it appears that the new college is the direct descendant of a school of art established in 1760. This institution developed into a notable school of painting and design, where a number of eminent Scottish artists received their training. In 1858 it was affiliated with South Kensington, and lost its distinctive character. In 1892, owing to the dissatisfaction with the rigidity of the South Kensington syllabus, there was founded under Sir Rowland Anderson a school of applied art. The Heriot-Watt Technical College some years ago founded another school to give a thorough practical training in drawing, design, painting, and sculpture. Another school of art was founded in 1858 by the Royal Scottish Academy for the purpose of giving instruction in painting and drawing from the life. The new college represents the amalgamation of all these institutions. It is to be a College of the Fine Arts and of the Decorative Arts and Crafts. On the purely artistic side the highest standards will be aimed at, and it is the purpose of the college to give an art training as comprehensive as any to be had at home or abroad. On the crafts side the training will be thoroughly practical. The committee states that the director of the new institution should be a thoroughly capable man of business who has had experience in the work of organisation and some knowledge of the practice of art education at home and abroad. He should also have such knowledge of and sympathy with art as would command the respect of those engaged in teaching under him. He must also have some knowledge of the industrial arts. The salary of the director is fixed at £800 per annum. If the combination of qualities outlined by the committee can be found in any one man, then he is cheap at the money.

THE Leaving Certificate examination this year took place at Easter instead of midsummer, as in previous years. The Department had promised to take the shortened session into account in preparing the papers, and right well, on the whole, has it kept its promise. The papers, with hardly an exception, have been framed on the most admirable lines. In every instance they are directed to bring out intelligence rather than mere knowledge, and give full scope to the originality of pupils. So long as the examinations continue at their present level, there is no fear for Scottish secondary education. Schools are so dependent upon these examinations that almost all work up to them, but so long as the present *régime* continues that is really a gain rather than a loss.

THE Scotch Education Department has issued its sixth and latest memorandum on the teaching of various school subjects. Nature-study and science teaching generally is its theme. On the whole, it may be said to be comprehensive in scope and suggestive in treatment. One of the most useful parts of the memorandum is likely to be the seasonal nature-knowledge scheme prepared by Prof. J. Arthur Thomson, Aberdeen. The present treatise, like its predecessors, seems to take it for granted that the subject dealt with is the most important in the curriculum, and that time can be stretched out indefinitely to meet the requirements here laid down. Not even the solar day, far less the school day, would be sufficient to meet the demands of the various memoranda. All of them without exception suffer from a want of proportion and a want of perspective. A final memorandum is required determining the relative value of school subjects and the relative time required for each. Until that is done, the memoranda will remain largely *in nubibus*.

IRISH.

THE welcome given to the Irish University Bill is becoming less effusive. The warmth of its reception seems to be giving way to a Laodicean coolness. It was at first supposed that Mr. Birrell had discovered an ideal solution. It appears, after all, that Ireland must be content with a *pis aller*. The Chief Secretary set himself to provide a university scheme which should leave Trinity College alone, should satisfy Roman Catholics, and should be democratic and undenominational. To do all this in Ireland is a contradiction in terms, but the Bill is likely to become law, probably without real modifications, for political and religious feeling runs too high to permit of other plans which would be more frank and, in the end, probably more satisfactory.

THE criticisms up to date are principally these. On one hand the Roman Catholic Bishop of Limerick complains that religious teaching is excluded from the new universities, while the old universities, such as Oxford and Cambridge, are expressly recognised as places for the teaching of religion. On the other hand, the Dean of St. Patrick's has expressed a widely held opinion that the three universities will become *de facto* sectarian, Belfast being Presbyterian, Trinity College Episcopalian, and the new universities in Dublin, Cork, and Galway Roman Catholic. This is maranatha to Trinity College, which claims to be on a broad non-sectarian basis; its fellows, therefore, protest against such a tendency, and Dr. Mahaffy regards the new measure as mischievous, and would prefer a solution in which Trinity College was not left alone. The General Assembly of Presbyterians in Belfast, for similar reasons, would prefer the Bryce scheme; its desire is openly for non-sectarian colleges, and it wishes all professors to give a guarantee against enunciating religious opinions likely to be distasteful to any student. Cork, again, thinks it should have had a Munster University, and is willing to accept the professed scheme only so far as it leads up to such a result. Finally,

there is complaint on financial grounds, on the principles of affiliation, and on the absence from the proposed lists of new senators of some of the most striking names in Irish education.

ONE clause in the Bill is particularly interesting to secondary schools, and may mark the initiation of a new system of intermediate education. The university is given power "to examine and inspect schools and other educational institutions and to grant certificates of proficiency, and to provide such lectures and instruction for persons not being members of the university as the university may determine, and to co-operate by means of joint boards or otherwise with other universities and authorities for the conduct of matriculation examinations, for the examination and inspection of schools and other academic institutions, and for the extension of university teaching and influence in academic matters, and for such other purposes as the university may from time to time determine." Is this Mr. Birrell's way of suggesting a reform in Irish secondary schools leading to inspection and training of teachers? Or, will it remain a dead letter?

THE Consultative Committee representing heads of intermediate schools has for the present practically broken off relations with the Intermediate Board. It had become an open secret that the Commissioners were to meet the committee and hear in person the objections which the committee, as representing the teachers, has to the present system of Rules. In the end, however, the Board thought better of the interview, and referred the committee to the Assistant Commissioners, requesting it to put its wishes in writing. Whether wisely or not, the committee replied that it had met the Assistant Commissioners on several previous occasions and had put its views before them without much definite result, and therefore saw no use in presenting a memorial. Sooner or later the *non possumus* attitude of the Board must be given up; the sooner, the more satisfactory. It is neither right nor possible to keep the teachers at arm's length. Meanwhile, at the time of writing, the Rules and Programme for 1909 have not appeared, and the schools are close upon the end of the academic year. There should be no difficulty in publishing them by Easter at latest.

WHAT the Consultative Committee would not do has, however, been done by the Teachers' Guild and the Women's Graduates' Association. They have drawn up a scheme of intermediate education which would command general support among teachers, and would be a great improvement on the present system. It simplifies the rules for passing, brings mathematics, especially arithmetic, into its proper position, and reduces the number of courses for exhibitions and prizes from five to two, giving due prominence to the ordinary subjects of secondary schools, and offering inducements to schools to insist upon their importance instead of drawing away pupils in the hope of gaining rewards on the less important subjects.

THE Department of Technical Instruction has issued an important circular directing attention to some misunderstanding of its intentions. The Department has in some places been compelled to refuse payment of grants to managers of some technical schools in which students have been allowed to attend classes in subjects which have little or no bearing upon the business, trade, or industry in which they are engaged. It points out that pupils must receive instruction in the subjects of organised courses which have been designed to meet the real requirements of localities and have also been expressly approved. The current number of the Department's *Journal* (vol. viii., No. 3, 200 pp., 6*d*.) contains the fifth of a short series of articles dealing with some recently established technical schools in Ireland, the school dealt with being that in Queenstown, the work of which is conditioned by its proximity to the Haulbowline Dockyard. The article is freely illustrated with photographs.

WELSH.

AT the annual meeting of the Welsh County Schools' Association, held at Shrewsbury last month, the question was raised as to the part schools should play in providing for careers for the boys taught in them. It was pointed out that the universities had already appointed strong committees to consider the matter of getting and keeping students in touch with openings in engineering and other trades. The feeling was expressed that unless the schools were able to do something in the way of opening out careers for boys and girls, there would be a change in the popular attitude towards the schools. The intermediate schools of Wales would be judged, it was said, by their practical results. It was resolved "That particulars be obtained respecting the different trades and professions open to boys."

THE following announcement has been made by the Welsh Department of the Board of Education to the local governing bodies of the intermediate schools: "The local governors may, with the approval in writing of the Board of Education, make special provision in or in connection with the school for the education of boys and girls who intend to become teachers in public elementary schools, and may, with the like approval, as regards such boys and girls only, make such modifications in the foregoing provisions relating to ages, instruction, examination, and fees as they think suitable for the purpose."

IN the Denbighshire County Council, the estimate of receipts and payments has been made for the year ending March 31st next. The receipts, which included grants of £41,500 from the Board of Education, were put at £44,750, and expenditure was estimated at £68,322. It was proposed to levy a rate of 11*d*. in the pound for elementary education, 1½*d*. for higher education, and ½*d*. for intermediate education.

THERE is a good deal of feeling in Wales, in view of the grants proposed to be given towards university education in Ireland, that Wales has now an increased claim for receiving higher grants to each of the constituent colleges of the University of Wales. It is maintained that there is no part of the United Kingdom in which the working classes and the middle classes have done more, if so much, in contributing their pence, shillings, and pounds for higher education.

THIS year the Bangor Normal College celebrates its fiftieth anniversary. It is proposed to extend the accommodation so as to make it one of the largest training colleges in the kingdom. The college has been handed over to a joint body appointed by the education authorities of the counties of Anglesey and Carnarvon. The new scheme provides for the erection of four residential hostels to accommodate 200 students. The cost of extension is estimated at £20,000. It is desired also to associate the Normal College more closely with the University College of North Wales. It is hoped that some plan will be found to enable the matriculated students resident at the Normal College to be entered as students in the University of Wales, and to work for the degrees in the University.

AT a recent meeting of the managers of the Ruthin grouped schools it was stated that within their district there were fifty-eight children who had to walk more than three miles to school, 194 who had to walk between two and three miles, and 516 who had to walk between one and two miles. The use of vehicles had been suggested, but the parents objected because, the roads being so bad on the mountains, they feared an accident. It was decided to urge the county authority to build a new school at a village in one of the isolated mountain districts concerned. Applications for similar facilities were made by other districts.

THE eleventh annual report of the Central Welsh Board (for 1907–8) has just been drawn up. The total number of pupils in the Welsh intermediate schools in 1907 was 12,499, as against 11,577 in 1906 and 10,413 in 1905. Of the 12,499, 10,446 came from public elementary schools. The number of teachers for 1907 is 666, making an average of between eighteen and nineteen pupils to each teacher. Ninety-three out of ninety-five schools are accommodated in permanent buildings; and at the annual meeting of the Central Welsh Board it was announced that the schools as yet only in temporary buildings are the Cardiff Intermediate School for Boys and the Swansea Intermediate School for Girls.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Murray's French Texts: *G. Sand, La Mare au Diable*, and *É. Souvestre, Confessions d'un Ouvrier*. Edited by W. G. Hartog. xiv+102 and viii+114 pp. (Murray.) 1*s.* 6*d.* each.—Of fresh series of French texts there is no end. Mr. Murray's is the latest and not the least attractive. To each of these volumes is prefixed a short account, in French, of the author; there are notes, as a rule also in French, at the foot of the page, explaining difficulties in the text. Mr. Hartog has also added *questionnaires*, exercises in grammar, and suggestions for written exercises. These are perhaps the least satisfactory part of the work. In the case of the "Confessions," there are only six pages of questions and exercises to 108 pages of text; and in many cases the written exercises suggested are merely "dictée" or "réponses aux questions" or the parsing of a sentence. For the learner to get full benefit from the text, the exercises might well have run to twenty pages. The get-up of the books deserves praise.

Corneille, Polyeucte. Edited by G. N. Henning. xxvi+149 pp. (Ginn.) 2*s.* *Corneille, Nicomède*. Edited by G. H. Clarke. xxxvii+177 pp. (Macmillan.) 2*s.* 6*d.*—These editions of plays by Corneille deserve praise. Both editors give some account of Corneille's predecessors in the drama, and give special consideration to the play in question. Mr. Clarke also has a section on French prosody, which well deserves perusal. The annotation is in both cases very satisfactory. Mr. Clarke has added a convenient summary of the chief grammatical peculiarities occurring in the text. Mr. Henning has supplied, in an appendix, a number of well-devised *sujets de compositions*; in Mr. Clarke's edition, also, we have subjects for free composition in Appendix IV., the other appendices consisting (as is usual in Mr. Siepmann's series) of words and phrases, and sentences on syntax and idioms. Instead of continuous passages for retranslation, however, there are passages from English historians and literary critics dealing with kindred topics to those considered in the introduction.

Bossuet, Oraisons Funèbres. xi+262 pp. (Dent.) Cloth, 1*s.* 6*d.*; leather, 2*s.* 6*d.*—The series entitled "Les Classiques Français," and ably edited by Mr. H. Warner Allen, continues to grow; it is undoubtedly the most pleasing to the eye of all such series. The volume before us contains a short but illuminating preface by M. René Doumic, an etching by Mr. Symonds, and a bibliographical note. One of the charms of these volumes is the absence of annotation. They are eminently books for the lover of literature.

French Song and Verse for Children. By Helen Terry. xvi+125 pp. (Longmans.) 1*s.* 6*d.*—A very attractive little book, introduced by Mr. P. A. Barnett with wise and kindly words, and embellished with a number of pictures by Mr. Tempestini, whose children are charming; with animals he is less successful. Most of the songs and poems are old favourites; the range is wide, for we pass from "Savez-vous planter des choux?" to Malherbe's "Paraphrase du psaume cent quarante-cinquième"! We are inclined to think that the inclusion of the last-mentioned poem, of Arnault's "La Feuille," of Musset's "Venise Endormie," and a few others is a mistake in a book intended "for children." There are a certain number of anonymous poems which are quite unexceptionable in spirit, but very faulty in form; the rhymes are often altogether impossible if the French rules of prosody are taken into account.

P. Mérimée, Le Coup de Pistolet. Edited by J. E. Michell. 63 pp. (Blackie.) 6*d.*—The famous short story is here printed in large type and supplied with a brief introduction, fourteen pages of notes, and a vocabulary. The notes are adequate; here and there they are open to criticism. It is a mistake to talk about "ablative absolute" (p. 38) in French; *voilà* is not originally an imperative (p. 39); *manc* (p. 43) is not German; "the *ll*'s are soft" in *griller* (p. 45) is a bad way of expressing the sound meant. It is not clear on what principle words have been omitted in the vocabulary: *lui* is given, but not *moi*; *long*, but not *joli*; *confusion*, but not *danger*; *monsieur*, but not *madame*; *pire*, but not *meilleur*; *sans*, but not *avec*.

X. de Maistre, Les Prisonniers du Caucase. Edited by C. W. Robson. vii+72 pp. (Ginn.) 1*s.* 6*d.*—This short story (the text runs to thirty-six pages) is exciting, and makes a good reader for an intermediate class of boys. The notes are quite adequate; they would gain by the omission of those of the "why subjunctive?" type. The editor also furnishes questions on the text and sentences for retranslation; and there is a complete vocabulary.

Classics.

The Iliad of Homer, V. and VI. Translated by E. H. Blakeney. 101–164 pp. *The Prometheus Bound of Aeschylus*. Translated by W. Headlam. 36 pp. *The Eumenides of Aeschylus*. Translated by the same. 46 pp. (Bell's Classical Translations.) 1*s.* each.—We have already reviewed earlier volumes of Mr. Blakeney's translation, and this volume is of the same character. It is written in the style that has been made familiar by Butcher and Lang, but not with the same skill, although it is readable. Mr. Blakeney has little feeling for sound; such phrases as "rich-tilthed Tarne" (p. 103) are unpronounceable, and only appeal to the eye. But in this volume there are several mistranslations. δολιχόσκιος is not a "shadowy lance" (p. 102)—a ridiculous epithet: "long-shafted" is the meaning. μήστωρε φόβοιο of the horses of Aeneas does not mean "counsellors of terror" (p. 113), but "swift

to run." The boulder that Tydeus threw was a "huge thing," not a "mighty feat" (p. 115). ἑκατόμβοι' ἐννεαβοίων is not "offerings of a hundred oxen for offerings of nine" (p. 153), but armour worth those amounts respectively. Two of these translations make nonsense. The notes, as before, show little discretion: parallels from English poets are welcome, and some of the scriptural quotations have point; others, however, are useless (see, *e.g.*, that on ἐπὶ κτεάτεσσι, p. 108[2], that on the wrath of gods, 109[1], and the parallels to πρὸς adverbial 115[4], and to "quit you like men," 146[1]).

Dr. Headlam's volumes are in a different class altogether. The translation is excellent, and the notes really valuable. Dr. Headlam owes us a complete Aeschylus, but until his debt be paid we think him heartily for this instalment of his studies. Text and interpretation are both helped by his notes, and they deserve the serious attention of scholars. Very rarely do we find ourselves obliged to differ from him in a matter of literary taste. One such passage is that of notorious difficulty, εὕδουσα γὰρ φρὴν ὕμμασιν λαμπρύνεται *Eum.* 104, which seems to us quite appropriate; the Furies are not as gods, they have to sleep like men, and their knowledge is limited; the whole scene with Clytemnestra's ghost shows their limitations. Again, the criticism of ταῦτα, p. 24, *note*, fails to appreciate the effect of position: the right sense is suggested, but not completed, in the lines ταῦτα—νεοπαθής, and they have only to be read aloud to justify themselves. But the majority of the notes are excellent, and they are all original.

Euripides, Heracleidae. Edited by A. C. Pearson. xl+166 pp. (Cambridge University Press.) 3*s.* 6*d.*—Mr. Pearson here gives us the fruits of independent study of this difficult play. The introduction is excellent, especially the dramatic criticism; in editing a play there is need of more help of this sort than in the case of such books as the last mentioned. The notes also are thoroughly good, in spite of the fact that there are too many of them. If the book be meant for private study we have no fault to find; but for class use more should be left to be made out by the class, or to be told them at the discretion of their master. The fact seems to be that editors keep in mind more than one kind of reader: the boy, the lone learner, and the master himself. For the first, they should not forget how much greater the half is than the whole.

An Introduction to Latin Prose. By G. W. Mitchell. vi+204 pp. (Toronto: The Macmillan Co.) 3*s.* 6*d.*—The material of this book is a series of sentences in Latin followed by a series of sentences in English. The arrangement follows the traditional Latin declensions in the same order, with as much of the verb as is indispensable, a little at a time. The verb begins with *est* and *erat*, and goes on to sparse forms of the first conjugation, and so forth. The only point of novelty is that the subjunctive is introduced early (Lesson XI.). If first impressions go for anything, the learner will get the impression before Ex. XXI. that all verbs are of the *a*-type. Of course, there must be order in any such book; but we see no justification for its existence when there are scores of others like it. There is nothing in the subjects of the exercises to attract attention: they are mostly stupid and dull and incoherent until we get to simplified bits of Caesar, and then there is not story enough really to interest. We hold that a dull book is self-condemned. Take Ex. V.: "The goddess grants the victory to the seamen. The goddess vouchsafes the victory to the islanders. The sailors gave the booty to those who dwell on the island"—each party having apparently conquered the other, like the famous South Sea Islanders and their washing.—"The mariners present the goddess with a statue." And so forth. Is this to "train the learner from the very beginning to look beyond *words* to *ideas*," as the editor claims in his preface? It is not our idea of that process. Many details call for criticism: *e.g.*, we have on p. 116 a list of examples of the "future infinitive active," in a form which will perhaps never meet the learner's eye: "nuntiaturus esse, *will* or *would announce*; processurus esse, *will* or *would advance*," and so forth: observe the meanings given. It is fair to add that the later exercises are more sensible, granted the tacit assumption that the subject-matter of Latin exercises should be altogether warlike.

Vocabulary to Caesar. 54 pp. *Vocabulary to Virgil.* 116 pp. By A. Graham. (Blackie.) 1*s.* each.—These two vocabularies are said in the publisher's note to be prepared for use in schools where pupils are not at first provided with dictionaries of their own. They are intended for use with Blackie's "Latin Texts," and mark the quantities of vowels in a similar way. On opening these vocabularies our first thought is whether the editor of Blackie's "Latin Texts" approves of them. Would he not prefer that the pupils referred to should be provided with dictionaries, and would not the use of such vocabularies mar the advantages to be derived from the use of the texts? The vocabularies are of the usual kind, without references or the addition to important words of even common idiomatic phrases. There is need, also, of further revision. In the first column of p. 6 in the "Caesar" we have *aliquā*, nom. s. f., *Ambiorix -igis* (for *Ambiorīx -īgis*), *amplissime* (for *amplissimē*); on the next page *levis armatūra*. *Atque* (p. 6), we are told, is used as a particle of comparison after certain words meaning *than*, *as*, but we are not even told what sort of words. Double forms, *adfero* and *affero*, *adficio* and *afficio*, *adolescens* and *adulescens*, are given; but why not *adpellare* as well as *appellare* when *adpellere* and *appellere* are both inserted?

The Aeneid of Virgil. Translated into English verse by John Conington. Twelfth impression (1907). xx+456 pp. Reissue, 1908. (Longmans.) 2*s.* 6*d.* net.—Conington's Virgil seems to be an abiding favourite. It is not our favourite: the metre, Scott's ballad metre, is too lax and too jaunty to suit the austere dignity of the Latin hexameter; but it has its merits. It is bright and quick, and may please many who care nothing for blank verse. It is certainly better than the hurrying gabble-metres now so fashionable.

Greek Buildings, represented by Fragments in the British Museum. By W. R. Lethaby. I. "Diana's Temple at Ephesus." 36 pp. II. "The Tomb of Mausolus." By the same. 37–70 pp. (Batsford.) 2*s.* each net.—The first of these pamphlets is a brief account of the British Museum remains (practically all that exist) of the New Temple at Ephesus, written by a competent architect. It describes the excavations of Wood, and criticises Murray's restoration, suggesting a new one. There are twenty-nine illustrations, plans, and figures. The study of the Mausoleum is illustrated by twenty-eight cuts and illustrations, both of actual remains, contours, &c., and of restorations. By a close piece of reasoning the author concludes in favour of what is known as the larger plan: an oblong with nine columns on the fronts and eleven on the flanks, making thirty-six as Pliny states; only this plan has the proper difference of two bays between side and ends, and exactly suits the size of the foundation. Exact measurements are given. All archæologists will welcome these excellent pamphlets, and hope for a continuation of the series.

History.

The Teaching of History. By Dr. Oskar Jäger. Translated by H. J. Chaytor, with an introduction by Prof. C. H. Firth. xxiv+228 pp. (Oxford: B. H. Blackwell.) 3*s.* 6*d.* net.—Dr. Oskar Jäger is a Prussian schoolmaster who has had no fewer than fifty years' experience as a teacher of history. His aim in writing this work has been strictly practical. He has no new scheme to advocate; all he wishes to do is to expound the official scheme established by Government authority throughout the schools of his country, and to show how it may be employed to the highest educational advantage. To the English edition which is now under review Prof. Firth, of Oxford, provides an exceedingly valuable introduction, which not only describes in a full and interesting manner the aim and method of Prussian historical instruction, but also indicates in what respects the Prussian scheme, with all its rigidity, is superior to the English "anarchy" which is sanctified by being baptised "elasticity." The Prussians divide their historical course, which extends over nine years, into three stages. In the first, or preliminary stage—comprising generally the years nine to eleven of a child's life—"history is replaced by tales of the great men of mediæval or modern times, and by legends of classical antiquity." In the second, or intermediate stage—comprising the four following years—Greek history to the death of Alexander, Roman history to the death of Augustus, and German history from the earliest days to 1871, are in turn taught. In the third, or higher stage, the ground is covered again in a wider survey. Ancient history to the fall of the Western Empire in A.D. 476 forms the beginning. Then follows European history from 476 to 1871. Dr. Jäger, after giving a brief introductory disquisition on the aims and value of history as a school subject, plunges into a detailed discussion of the methods and materials which should be used in each of the nine years of the pupil's career. This detailed treatment is not exactly lively or sparkling, but it is eminently sane, and it contains much wise criticism, much good advice, and many valuable suggestions.

The History of the Popes during the Last Four Centuries. By L. von Ranke. Three vols., xix+548, vii+573, xii+500 pp. (Bell.) 3*s.* 6*d.* per vol.—This is the well-known history of the Popes by Ranke, with Mrs. Foster's translation "revised by G. R. Dennis." We have compared it with our copy of the edition of 1886, and note the following alterations. In the third volume there is a portrait of Paul III. instead of that of Clement VII. In the notes the authorities are quoted in the original languages, sometimes in addition to, sometimes instead of, the translation thereof into English. The reason given for this is that the substance of the originals is embodied in the text. There are references to the author's later works. The last paragraphs of the former book are changed, and there is a continuation of the story down to the Vatican Council of 1870. That accounts for the change in the title. But there is no addition to the documents in the third volume to correspond to the more modern part of the story.

Highroads of History. Fourth Book. Other Days and Other Ways. 256 pp. (Nelson.) 1*s.* 6*d.*—This consists of stories from various parts of English history from the earliest times to 1485. It does not profess to be a continuous story, but there is a summary of British history, with dates, occupying the last twelve pages. There are also twenty pages of "poetry for recitation," and a number of reproductions in colour of great historical paintings, besides plans and photographs.

The Story of Cheshire. By O. Estry. 185 pp. (E. J. Arnold.) 1*s.* 8*d.*—This little book tells the story of England as viewed from and in Cheshire. It is very readable, it contains many references to local matters of interest, it has several photographs, and three or four maps, one of which is a reproduction of the map in Camden's "Britannia" published in 1586. It should be welcome to all Cheshire folk and visitors thereto. Two things we miss, which we half expected, an explanation of the "rows" of Chester and a reference to the literary fame of Knutsford.

A Chart of the Centuries from the Norman Conquest. By W. S. Childe-Pemberton. (Philip.) 2*s.*—This is a large wall sheet in black on which ten horizontal lines are drawn in red, with subdivisions in the same colour, a dot for each year, and the accessions of the kings also printed. This is for the teacher's use. Corresponding thereto is a reproduction thereof, 11 in.×8 in., for the pupil's use (price 1*d.*). The idea of the deviser is that, by means of chalk points, a teacher may render visible to his pupils the period which forms the subject of the lesson, and help to fix dates.

A Junior History of England. By E. Nixon. viii+254 pp. (Bell.) 1*s.* 6*d.*—A well-written and accurate short history from the beginning to the end of Victoria's reign, with maps, pictures, genealogical tables, and a summary.

Lessons on Civics. 79 pp. (265–343). (Blackie.) 6*d.*—A reprint from "A Short History of England" of the pages which there form a pendant to a brief account of British history, and give a good account of the modern British Constitution.

Time Table of Modern History, 400–1870. By M. Morison. 159 pp. (Constable.) 8*s.* 6*d.* net.—There is so much laudation of this good book in the "Press notices" sent with the present second edition, as well as in the introduction, that we need do no more than say it is a list of events in parallel columns under headings of the States, that there are genealogical tables (rather scanty), lists of ruling monarchs, a general chart of ancient and modern history, and a full index; that the pages measure 14½ in.×12 in., and that we could wish that the influence of Dr. Bryce's "Holy Roman Empire" had been more prominent in the earlier pages.

WE have received from Messrs. Macmillan new editions of "The Citizen and the State, Part ii., Industrial and Social Life and the Empire," by J. St. Loe Strachey, xii+223 pp., 1*s.* 6*d.*; and "History of Italy," by W. Hunt, xi+296 pp., 3*s.* 6*d.*, a useful manual by a well-known writer, giving the story of Italy from the invasion of the Lombards to the present day.

Geography.

Highways and Byways in Hampshire. By D. H. Moutray Read. With illustrations by A. B. Connor. xvii+437 pp. (Macmillan.) 6*s.*—The characteristics of the series to which this book belongs are now both widely known and highly appreciated. Each volume has an individuality of style and treatment, but in every one there is that happy combination of literary quality, artistic expression, and eclectic narrative which is a desirable attribute of a guide, philosopher, and friend, whether in person or in print. The books are not "Baedekers" of the counties to which they refer, but are rather of the nature of entertaining recollections of places, people, and events; or perhaps they may be described as memories of

the past with musings on the present. For school purposes Mr. Read's volume is of little direct service, and yet it is a book which any teacher or senior pupil, particularly in the county of Southampton (excluding the Isle of Wight), will find of much interest from the historical point of view. It is a story-book of a very interesting county, and every page of it may be read with both pleasure and profit. Southampton makes an appropriate starting place, for up Southampton Water came invading hosts—Romans, West Saxons, and others—to spread over the chalk of Hants and Wilts to the upper Thames and further points of our isle. Southampton, the port, and Winchester, the old capital, of Wessex may be taken to correspond, as Mr. Mackinder has pointed out, to the east and west ends of London; while Portsmouth has the same position relatively to Southampton Water that Chatham on the Medway holds with regard to the estuary of the Thames. Winchester itself is so rich in historical associations that Mr. Read has to be content to leave untold much that he knows about it. The same is the case with many other parts of the county, yet the essential features and incidents are described, and there are peeps into many delightful corners. We pass with this companionable guide to Cheriton Wood, where twenty thousand Parliamentarians and Royalists met in battle in 1644; to Basing, where the Cavaliers retired; Silchester, with its earthworks and Roman remains; Andover, Romsey, Christchurch, Lymington, Beaulieu, Netley, Porchester, Hambledown—the cradle of cricket—and the Gilbert White country of hanger, heath, and hollow. What a variety of interests the county possesses can only be understood by reading such an epitome of its history and geography as Mr. Read has given us. Place the volume in a handy position on the library book-case, so that its healthy influence may be exerted upon all who are induced to dip into it.

Mathematics.

The Elements of Geometry in Theory and Practice. By A. E. Pierpoint. Parts i. and ii. xv+349 pp. (Longmans.) 2*s.* 6*d.*; or separately, part i., 1*s.* 6*d.*; part ii., 1*s.* 0*d.*—The range covered by this text-book represents the subject-matter of Euclid, book i., book iii., 1–34, and book iv., 1–9 and 15; but a considerable space is given to experimental and practical geometry in accordance with the custom now usually followed. The work as a whole is based on the report of the committee of the Mathematical Association, the sequence of the theorems being that of the Cambridge syllabus. Part i., of which there is now a re-issue, was noticed in The School World, vol. viii., p. 158; part ii. shows the same characteristics. There is abundance of simple exercises at all stages of the book, and while there is possibly an excessive number of exercises of the very simple type, there are others, such as those on loci (pp. 115, 116), that open out wider possibilities for the pupil. Very considerable pains have evidently been taken in the preparation of the book, and the introduction of such matters as co-ordinates and scale drawing adds to the value of the work for elementary pupils.

Geometry, Theoretical and Practical. Part ii. By W. P. Workman and A. G. Cracknell. vii+330–535 pp. (Clive.) 2*s.*—Part i. of this text-book was noticed in The School World, vol. viii., p. 198. The part now issued begins with the composition of rectangles, and after discussing rectangle theorems and regular polygons goes on to the treatment of proportion and similar figures. A chapter is devoted to harmonic ranges, centres of similitude, and inversion; while under the heading "Miscellaneous Theorems in Higher Geometry" some properties of coaxial circles, of the complete quadrilateral, of poles and polars, &c., are established. The concluding chapter deals with irrational numbers. The exposition retains the features referred to in the notice of part i.; it is careful and lucid, and aptly illustrated by selected examples. The treatment of proportion is, properly we think, based on the notion of commensurable magnitudes, but the chapter on irrational numbers is a very useful addition; the teacher who is to expound the modern treatment of the irrational number would do well to supplement the exposition here given by a study of a good treatise on algebra that includes the discussion of that somewhat complicated notion.

Experimental Trigonometry. By R. C. Bridgett. 72 pp. (Blackie.) 1*s.*—This little book possesses some good features, but, if designed to be an introduction for beginners, it does not seem to us to be very suitable for such a purpose. The number of examples of a practical kind, in comparison with the number of identities and theoretical examples, is much less than might be expected in a book bearing the title "Experimental Trigonometry"; sections 21, 22, and 23 of chapter ii. might well have been omitted so as to find room for some examples to illustrate sections 24–29, while the twenty pages given to chapters iii. and iv. are, in our judgment, out of all proportion to the four pages assigned to chapter v. The power of generalisation demanded of the beginner who does the "experiments" of chapter iii. is surely excessive, especially when part of the experiment consists, for example, in finding from the figure the ratios for angles of 30° and 45°; our own experience certainly would not lead us to expect that the average schoolboy would deduce the addition theorem and the corresponding product formulæ in the way suggested.

The Methodical Arithmetic. Edited by W. J. Greenstreet. Parts v. and vi., each 48 pp.; part vii., 64 pp. (Dent.) Paper covers. Part v. and vi., 3*d.* each; part vii., 4*d.*—Earlier parts have been noticed in The School World, vol. ix., pp. 437, 474. The parts now issued are designed for pupils in the fifth, sixth, and seventh standards respectively; part vii. meets the requirements of various examinations connected with elementary schools. The questions seem to be of quite a straightforward character, and range over a wide field in their selection of concrete examples.

Science and Technology.

Inorganic Chemistry. By E. I. Lewis. xiii+408 pp. (Cambridge University Press.) 5*s.*—This work is a decidedly original one, based on the author's experience as a teacher; in many respects it is very superior to the average text-book used in schools, especially in throwing a clear light on general principles. One of its most useful features is the way in which proof is adduced of the composition and formula of each substance dealt with; the correct meaning and use of equations are also specially emphasised. The principal elementary facts are presented, not only clearly and simply, but in a manner sufficiently interesting to appeal to the schoolboy and make an impression on his memory. From this point of view the book is a really admirable one—it is a clear statement of elementary principles illustrated by appropriate and often novel experiments. It may, however, be doubted whether, admirable as the arrangement is in some respects, the course recommended is the best possible one for teaching chemistry in schools. Like most other elementary text-books, it is purely didactic—if didactic in a somewhat novel

way; it tells the student too much and leaves too little to his observation and imagination. No doubt, also, too much is attempted for a school course; whilst it may be advisable or even necessary to deal with such subjects as reversible action and dissociation, the consideration of osmotic pressure and of the theories of electrolysis and solution are out of place in an elementary school course, seeing that they are even now matters of controversy. In spite of minor defects, however, the work can be cordially recommended to teacher and scholar alike as a serious attempt made, not altogether unsuccessfully, to provide an introductory first course in chemistry.

A Treatise on Chemistry. Vol. ii. The Metals. By Sir Henry E. Roscoe and C. Schorlemmer. Fourth edition, completely revised by Sir H. E. Roscoe and Dr. A. Harden. xvi + 1436 pp. (Macmillan.) 30*s.* net.—This work is too well known to need an introduction. It has long been the most readable text-book of chemistry in the English language, and for elementary students probably the most complete. Owing to the great progress made during the past ten years, the last edition had become sadly out of date; in the new edition great pains have obviously been taken thoroughly to revise the whole of the subject-matter in the light of the most recent research. Frequent references are given to original papers in order to elucidate particular points. Vol. ii., which has just been issued, deals with the metals and their salts. The extraction of the metals is treated very lucidly, the main principles being clearly stated, whilst unnecessary and confusing technicalities are omitted; the illustrations are admirable. One of the most striking points with regard to the work is the detailed manner in which the history of each substance is dealt with; this feature differentiates the present work from most other treatises and imparts to the text a special interest. In the new edition the introductory portion of the volume has been considerably enlarged, especially as regards the treatment of alloys and solutions. The section dealing with crystallography has been transferred from the first volume to the second; one cannot but feel that this portion is unsatisfactory, inasmuch as a far more detailed treatment would be necessary to impart a clear understanding of the subject, crystallography now being almost a science in itself. There can, however, be no doubt that, on the whole, the volume will be of great service as a convenient book of reference to most students and to many teachers of chemistry. On only one side can it be really criticised, namely, that it is lacking in the suggestiveness and broad philosophy which characterise such works, for instance, as Mendeléeff's "Principles of Chemistry." There is a danger that the student who reads this work may consider chemistry to be in a far more settled state than is actually the case. The present time is essentially a time of transition, and in a detailed treatise such as is under consideration the advanced student might expect to find some suggestion as to the nature of current problems of research. Whilst by leaving out of consideration most of the modern developments of physical chemistry the work is made an eminently "safe" guide, the brief treatment accorded to such questions as thermochemistry, valency, dissociation, and solution must appear as a drawback to advanced students.

Analytical Chemistry. An elementary class-book. By A. F. Walden and B. Lambert. 176 pp. (Oxford: J. Thornton and Son.) 3*s.* 6*d.*—This manual is intended to furnish an elementary introduction to the study of chemical analysis for students who have already had a course of "heuristic" training in the subject, including some quantitative work. It is concerned only with the analysis of single substances and simple salts. After an introductory chapter, which deals with some of the ideas underlying chemical analysis, there follows a systematic description of the more common metals, including an account of their properties and the reactions of their salts. Later chapters contain accounts of the acid radicals and their reactions, the preparation of a solution for analysis, and the general lines on which that analysis should be attempted. The authors rightly believe that the unintelligent use of analytical tables is responsible for most of the evil results commonly attributed to "test-tubing." They therefore leave the student to construct his own tables, contenting themselves with providing him with the necessary information. Dry tests are considered separately, and finally a chapter is devoted to a short discussion of the most important insoluble substances and the methods of dealing with them. Within the limits to which they confine themselves, the authors provide a fairly complete course, adapted to students in the senior classes in schools or in their first year at the university who have already a considerable knowledge of the metallic, as well as the non-metallic, elements.

Miscellaneous.

H.M.I. Some Passages in the Life of one of H.M. Inspectors. By E. M. Sneyd-Kynnersley. viii+358 pp. (Macmillan.) 8*s.* 6*d.* net.—It would be difficult to describe the frame of mind of the young teacher or inspector who purchased this volume with the idea that it was a treatise dealing with the theory or history of education. We surmise, however, that he would soon congratulate himself on his mistake, and settle down to the quiet enjoyment of the excellent stories with which the pages abound. Mr. Sneyd-Kynnersley knows how to tell a story, and he has many decidedly worth telling. He seems never to have taken his vocation very seriously, and some of his experiences suggest that a college for inspectors—in addition to that recommended for examiners by Lord Rosebery—would be a valuable institution. But things have changed since 1870, when Mr. Sneyd-Kynnersley entered the service of the Education Department, leaving his career of "briefless barrister" to undertake to assist to guide the destinies of his country's education. Certainly the schoolmaster who, requiring entertainment in his leisure hours, picks up this book, will forgive the author all these things and many more for the hearty laughter he knows how to command.

CORRESPONDENCE.

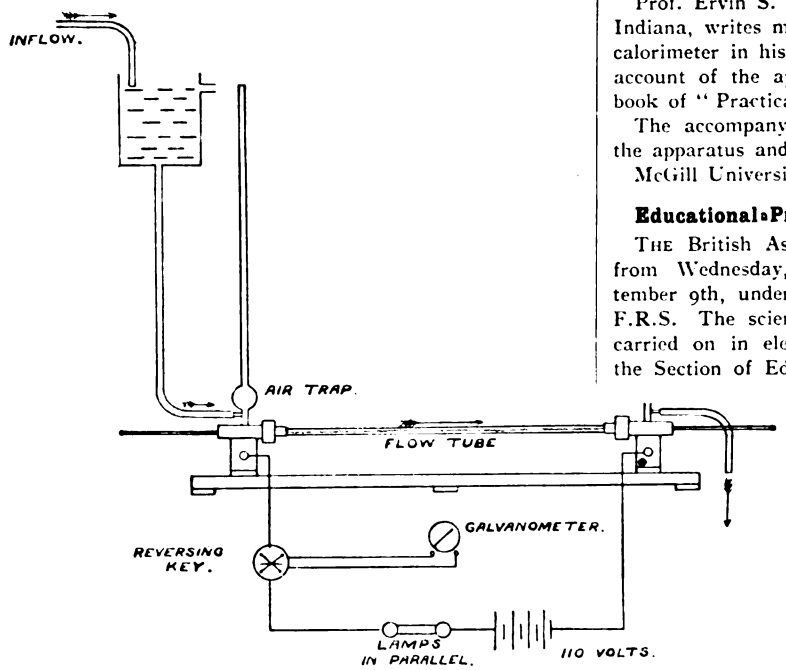
The Editors do not hold themselves responsible for the opinions expressed in letters which appear in these columns. As a rule, a letter criticising any article or review printed in THE SCHOOL WORLD *will be submitted to the contributor before publication, so that the criticism and reply may appear together.*

A Simple Continuous Electric Calorimeter for Students' Use.

FOR several years we have been using, with considerable success, a simple form of the continuous-flow calorimeter for measuring Joule's equivalent in the electrical laboratory work of our elementary students. I venture to describe the apparatus here in the hope that it may commend itself to those engaged in practical work as being simpler of operation than the older electrical methods of measuring this important constant.

A glass tube, about 50 cm. long and 2 to 3 mm. internal

diameter, is cemented at both ends to brass collars carrying washers and nuts which screw into brass castings drilled out to receive suitable thermometers. A heating wire, of about 10 ohms, coiled in a long helix, passes through the tube, and is soldered to the brass collars. The helix serves to break up the stream-lines and thoroughly to mix the water as it flows through. A copper or tin vessel with overflow maintains a constant head of water from the city mains at any desired elevation, and a tube conveys the water to the inflow end of the calorimeter. An air trap, made from an inverted thistle tube, serves to catch any air bubbles liberated or carried down by the water. The temperature of the inflowing water is measured on the thermometer. After passing through the flow tube the water passes out at the outflow end to a suitable measuring vessel. The temperature of the outflowing water is recorded at regular intervals on the second thermometer. The upper end of the brass T, to which the outflow pipe is attached, is open to the air, and establishes the head



independent of the exact level of the end of the outflow pipe. Having obtained a reading on the two thermometers before any heating current is turned on, the electrical circuit is completed, and after four or five minutes, during which the temperature of the outflow water becomes steady, readings are commenced. These consist in measuring the current at regular intervals on a tangent galvanometer or a Weston ammeter, and reading the inflow and outflow temperatures during the time taken to obtain a suitable amount of water to weigh, or during the time necessary to fill a vessel of known capacity. From these readings the average flow per second and the difference in temperature can be determined, and hence the number of calories of heat carried off by the water per second calculated. Knowing the electric current and the resistance of the heating wire, the electrical energy in watt seconds can be calculated, and the ratio of this to the heat produced gives the value of J. In place of knowing the resistance of the heating wire, the drop across the calorimeter may be obtained on a voltmeter. In our work the ordinary 110-volt direct-current circuit is used through a number of lamps, which may be connected either alone or in parallel. Various experiments may be performed with different flows and different heating currents. An alternating heating current may be employed when a suitable A.C. ammeter or dynamometer is introduced.

The value of the method lies in its directness and great simplicity. No corrections are necessary for heat loss provided the mean temperature of the flow-water does not differ more than about 5 degrees from the temperature of the room, and even for larger differences the correction is very small. The object of the experiment, which is the measurement of "J," is not lost sight of by the elementary student in determining troublesome corrections. A few values, taken at random from the students' results, are as follows: 4·16, 4·20, 4·12, 4·25, 4·18 joules per calorie. These were obtained with heating currents from 2 to 4 amperes. The rise of temperature ranged from 6 to 12 degrees, and the water-flow was varied from 2 to 4 grams per second.

Prof. Ervin S. Ferry, of Purdue University, La Fayette, Indiana, writes me of the success attending the use of the calorimeter in his elementary classes. He has included an account of the apparatus and method in his recent text-book of "Practical Physics," vol. i.

The accompanying diagram shows the general plan of the apparatus and connections. H. T. BARNES.

McGill University, Montreal.

Educational Programme of the British Association.

THE British Association will meet this year at Dublin from Wednesday, September 2nd, to Wednesday, September 9th, under the presidency of Dr. Francis Darwin, F.R.S. The scientific business of the Association will be carried on in eleven separate Sections, one of which is the Section of Educational Science. The president of this Section is Prof. L. C. Miall, F.R.S., and the vice-presidents are Sir Philip Magnus, M.P., Dr. A. Traill, the Very Rev. Dr. W. Delany, and Sir Oliver Lodge, F.R.S. Though the programme of this Section has not yet been settled definitely, a preliminary statement can be made as to the main subjects of discussion.

The Education Section will meet on the mornings of September 3rd, 4th, 7th, and 8th. There will be no afternoon meetings for discussions or the reading of papers, but visits will be arranged to certain schools and other places of educational interest. The address of the president of the Section, Prof. Miall, will be delivered on the morning of Thursday, September 3rd. The proceedings of the same day will include a paper by Mr. R. Blair, executive officer of the London County Council, on "Education under Local Authorities," dealing with the functions and operations of local education authorities, and one by Mrs. Burgwin on schools for defective children. Under the title "The Outlook: a Grand Experiment in Education," Prof. H. E. Armstrong, F.R.S., will deal with the related subject of the requirements of the day and the future with reference to present provisions.

Friday, September 4th, will be devoted to the discussion of various aspects of "Education in Relation to Rural Life"—a subject which can be considered very appropriately at Dublin, as Ireland is almost wholly an agricultural country. Prof. Miall and Prof. J. Arthur Thomson will deal with the subject from the point of view

of nature-study, while Prof. D. Houston and Miss Lilian J. Clarke will show how school gardens may provide opportunities for direct teaching in nature-knowledge as well as promote interest in rural occupations. The Most Rev. Dr. Foley, Bishop of Kildare, will indicate what is possible in Irish primary schools; while Dr. W. J. M. Starkie, Resident Commissioner of National Education, Ireland, and Mr. George Fletcher, will state their views upon the general subject. Mr. C. H. Bothamley, secretary to the Somerset Education Committee, will describe what is being done for rural education in some of the counties in England. It is hoped that the discussion will show that nature-study and gardening in the school can be made an instrument of intellectual as well as manual training. In connection with this subject, a report of a committee on experimental science studies in elementary schools will probably be presented.

The president of the Section desires to encourage the statement of personal experience in some methods of instruction by teachers attending the meeting. With this object in view, three subjects of practical interest to teachers will be open for discussion on Monday, September 7th: they are, (1) "Note-taking and Reports on Work"; (2) "Clear Speaking and Reading Aloud"; and (3) "Motive and Purpose in Experimental Work." It is not proposed to arrange for any papers on these subjects, the intention being to give teachers and others interested in educational methods an opportunity to express their views upon any of these points to which they have given particular attention. It will be both helpful and interesting to have an exchange of opinion upon what kind of notes should be taken during lessons, the character of reports upon observational or experimental work, the cultivation of clearness of speech, the neglected art of reading aloud, and the way to make pupils see for themselves the motive and purpose of the practical work they undertake.

Under the title "Tests of Educational Efficiency" there will be a discussion upon the place and nature of inspection and examination of school work, to be opened by Mr. T. P. Gill, Secretary of the Department of Agriculture and Technical Instruction for Ireland. It is intended, also, to deal with "Training in Teaching," with particular reference to the character, amount, and value of the actual teaching practice engaged in by students in training colleges. Among the openers of this discussion will be Miss C. P. Tremain, head of the Secondary Training Department, Alexandra College, Dublin, and Mr. C. MacGregor, master of method, Training Centre, Aberdeen.

A discussion on forms of education and their relative values will be introduced by Dr. G. Archdall Reid, who has given much attention to what may be termed the biological aspects of education, and Prof. E. P. Culverwell, professor of education, Trinity College, Dublin. An opportunity will thus be provided for expressions of views as to the fundamental objects of education and the place or value of classical and scientific studies in the curriculum. It is not intended, however, merely to have a recapitulation of the often repeated arguments as to the advantages of teaching classics or science, but rather a discussion of the fundamental reasons which render it probable or improbable that the careful study of one subject may make a student more capable of studying another subject, not only because he will have gained points of contact with the new one, but also because his mind is a more efficient instrument.

What is really wanted is systematic inquiries with the view of arriving at definite educational principles as the result of experiment. There is a growing feeling that every university department of education and every training college should be an active centre of educational research, and not merely a temple for teaching scholastic philosophy. A plea for work of this kind will be put forward by Prof. J. A. Green, of Sheffield; and Prof. J. J. Findlay with Mr. Sandiford, of Manchester, will give a brief review of varieties of experimental work, leading up to (*a*) an indication of those lines that are most promising and urgent; (*b*) the expenditure and other conditions necessary for serious work.

Among the reports of committees to be presented will be one on the results of an inquiry into the sequence of science subjects in secondary schools for boys.

No technical qualification is required for admission as a member or as an associate of the Association. New members pay £2 for the first year and £1 for every following year in which they continue to pay a subscription without intermission. Associates for a single meeting pay £1, but are not eligible to serve on committees or to hold office. Applications for a member's or an associate's ticket, either of which admits the holder to any of the Sections, and also secures admission to the various social functions and lectures, should be made to Prof. J. Perry, F.R.S., treasurer of the British Association, Burlington House, London, W. Ladies may become members or associates on the same terms as gentlemen.

Inquiries relating to the work of the Education Section should be addressed to Mr. W. D. Eggar, Eton College, Windsor; Mr. Hugh Richardson, Bootham School, York; or to me. The local secretaries of the Section are Prof. E. P. Culverwell, Trinity College, Dublin, and Mr. George Fletcher, Department of Agriculture and Technical Instruction, Dublin.

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(Recorder.)

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Some Problems of a Co-educational School.

I TRUST that it will not in any way be assumed from the title which I have prefixed to these random remarks that I am a convert whose faith is being shaken. Far from it. A certain sense of loss and desolation is apt to come over one at the bare thought of a return "to the old order." Let cynics smile; but if such feeling be genuine it were hard to pay a greater compliment to any system. Difficulties there must be connected with any system of education, but perhaps the truth lies somewhere near this: that with co-education the great vital difficulties steadily tend to diminish and disappear; the minor ones are ever present, possibly in increasing rather than decreasing proportion.

It is not my object here to seek to supplement in any way the admirable treatises which already exist, and deal ably with the great issues involved—the sanctity and preservation of the family bond, the development of social purity, the evils of the monastic system, &c.; all these "he who runs may read," and there is good reason to hope that the number of those so reading and thinking is steadily on the increase. All I have in view here is to discuss a few minor difficulties, drawn from practical experience in the working of a co-educational school.

In the first place, we are confronted with the staff difficulty. I think we are all agreed now that a "mixed" staff is not only desirable, but is absolutely essential, to the welfare of any co-educational school conducted on sound lines. But, having got so far, we have not yet

decided the sex of our "head." Skrine, in a passage in "Pastor Agnorum," propounds the question, what kind of man ought our headmaster to be? and "the answer is simple, no *kind* of man"; no, nor any *kind* of woman either, but such man or such woman as the particular circumstances of the case require. But whichever it be, let us have *one* head, and preserve us from the evils and almost inevitable friction of the dual system, with its headmistress under a headmaster and its artificial barriers and other incongruities, provoking the very evils that we are setting out to overcome by co-education proper. If our headmaster is fortunate enough to secure the services of a senior mistress of infinite tact and sympathy, and previous wide experience with girls, he is fortunate indeed. If to this can be added the influence of a wife, ready and willing to spare some time from her multifarious duties to take a personal interest in the girls, and even give some instruction in subjects such as domestic economy and hygiene, some of his gravest difficulties are solved. One's thoughts turn instinctively at this to Lamb and the "gentle *helpless* Anna" referred to by his correspondent, but intensely beautiful and pathetic as the passage is, one would not have her other than she was in her new state.

But to return from a digression, our headmistress will be equally fortunate in securing the services of a senior master of ripe experience, able to perform in some way the duties of a house master towards the boys. There must, above all, be a full and adequately equipped staff. Any system of education which places economy as the first object to be achieved is bound to end disastrously. With the added responsibility involved in a co-educational school there must be increased remuneration if the right teachers are to be found. It is to be hoped that any money arising out of the increased Board of Education grants will be devoted first and foremost to this end.

Turning to the time-table, there must be the same care to avoid the risk of putting economy first. We have to educate as well as co-educate our boys and girls. For this purpose a complete bifurcation of subjects will, of course, at times be absolutely essential—*e.g.*, cooking and domestic economy for girls, while the boys are taking manual work or experimental science. Experience would seem to show that, owing to reasons of expense, it is generally easier to develop the technical side of education for girls than for boys. Increased facilities can alone improve this state of affairs. Perhaps one of the greatest difficulties with which we have to contend is the tendency, which is fairly common, for a girl to come to the end of her "tether," particularly in such a subject as mathematics, at or about the age of sixteen. This naturally involves some difficulty in the senior classes at times, but no attempt must be made to force her to keep pace with boys, who often forge ahead rapidly at this stage. Speaking somewhat generally, my own impression is that if a girl has imbibed the good which underlies the particular subject, it is a mistake to keep her at it beyond her capabilities. Her mathematical capabilities, so far as they go, might be better directed to the financial side of domestic economy or some kindred subject. The same remarks and ideas apply to experimental chemistry, a subject which is not suitable for the great majority of girls.

As regards the important question of games, I think it is of the utmost importance here, as elsewhere, to allow and encourage experiments, and leave the boys and girls to draw their own deductions and act accordingly. In other words, to quote one's own experience, while nothing could be more enjoyable than an occasional game of "mixed" hockey or a "Bat *v.* Broomstick" contest at cricket, "mixed" games, as a regular rule, are discovered by the boys and girls themselves to be contrary to their best interests. Even so, these occasional "mixed" games serve a most useful purpose, as they not only stimulate energy and enthusiasm, but they further create a mutual interest in the fortunes of the teams which would otherwise be probably lacking.

I cannot do more than touch on the question of supervision. At times the parental breast is perturbed on such weighty questions as the walk to and from school, the arrangement of sitting in class, &c. I do not wish for one moment to minimise the importance of these matters. Discipline is discipline, and must be as unceasing as it is vigilant; but perhaps even more important from our particular point of view, it should be as *unconscious* as possible. Set up rigid demarcations, artificial barriers, unnatural limitations, and you will of a surety effectively overthrow any good that can possibly come of the best system of co-education ever devised.

I have reserved the best for last—the social life of a co-educational school. Yes, there are problems here, too, but they are for the boys and girls to work out, and on the result obtained depends the sum of their future happiness. I cannot refrain from quoting Robert Louis Stevenson, who, in speaking of the hopelessness of a system of separate education, goes on to say of the sequel: "So when I see a raw youth and green girl fluted and fiddled in a dancing measure into that most serious contract and setting out upon life's journey with ideas so monstrously divergent, I am not surprised that some make shipwreck, but that any come to port." How sad and accurate this description is our newspapers bear ample daily witness. In the social life of the co-educational school, with its opportunities for quiet reflection and discrimination, there lies the hope of amelioration in the study of this vital problem, on the solution of which the very existence of the State is dependent.

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The School World.

A Monthly Magazine of Educational Work and Progress.

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TRAINING IN "LIFE SAVING."

By F. B. SHAWE, B.A.
Bishop's Stortford College.

IT is not possible to trace here the origin and history of the Royal Life Saving Society; it can be read in the volume on Swimming in the Badminton series. It is enough to say that it had been demonstrated over and over again that a knowledge of swimming is by no means a guarantee of ability to save others from drowning. The Life Saving Society set itself to make a special study of the subject. Many methods of carrying a drowning person to land, of releasing oneself from what might easily prove his fatal grip, of resuscitating him when apparently drowned, have been carefully tested by repeated experiments, improvements suggested by experience have been introduced, and the whole put into the simplest form for teaching purposes. Two or three years ago the King presented a magnificent cup for annual international competition, and the society received permission to prefix the word "Royal" to its name. Although the work has increased by leaps and bounds since then, there is reason to believe that it is yet far too little known and appreciated in secondary schools.

After an experience of several years I am fully convinced of the good effects on boys of a course of life saving. Quite apart from the possibility of saving valuable lives, its effect on the general swimming ability is enormous. This is probably due to the fact that swimming on the back is essential; consequently a sound leg-stroke must be cultivated.

It tends to prevent accidents. Boys who have been through the course are thoroughly accustomed to being ducked at unexpected moments, and are consequently not easily flurried. Besides this, it teaches them, first, that the limit of their swimming capacity is reached suddenly, and, secondly, that a rescue is by no means an easy matter. As a result, though I believe they are themselves quite unaware of it, trained boys are more careful than others not to attempt too much. My experience at summer camps has invariably been that the boy who is a fairly good swimmer but has had no training in life saving is the boy who wants watching.

All this is purely utilitarian, but the training does not seem to be less valuable on that account. If we teach our boys and girls—for the training is equally suitable for girls—to swim, we surely ought to give them a chance of learning how to use their powers on behalf of others. Nor is the moral effect absent, though harder to gauge. The necessary training usually involves the voluntary sacrifice of free time for an object which is ultimately an unselfish one. The gain in self-reliance, based not on ignorance but on knowledge, is very great. Moreover, the assurance that in case of necessity one is able to do more than get in the way of others, or merely stand in safety and fatuously implore the drowning person to "keep up," tends to self-respect. Lastly, there is the moral compulsion to help caused by the knowledge how to do it.

FIG. 1.—How to carry a person who does not struggle.[1]

FIG. 2.—How to carry a person inclined to struggle.

In itself the course—as described in the society's "Handbook"—is simple enough. There are five recognised methods of carrying a drowning person in the water, adapted to various circumstances. There are three methods of releasing oneself from the clutch of a drowning person. Formerly three methods of resuscitation were taught, the well-known Silvester method being the most important. These have now been discarded in favour of the new method proposed by Prof. Schäfer, of Edinburgh University. It is simpler, more quickly applied, and easier to teach than any of the former methods. The

[1] The illustrations in this article are reproduced, with permission, from the "Handbook of Instruction" of the Royal Life Saving Society.

resuscitation is, of course, entirely dry land work. The rescue and release work has been reduced to a simple drill to be practised on land, so that accuracy in detail can be secured before water practice is indulged in. In addition to this it is necessary to be able to dive and recover from the bottom an object weighing from 2 to 5 lb. This does not adapt itself to land drill, and sometimes causes quite unexpected difficulties. The value of the training is not, of course, increased by any final test, but for boys it is distinctly advisable to take some examination. It is something definite to aim at, and weeds out with an impartial hand any unfit candidate.

There are various degrees of examination, but for secondary schools two are of main importance. For convenience of comparison the requirements are arranged below in parallel columns.

FIG. 3.—How to carry a person whose arms are difficult to hold.

FIG. 4.—Easy method of helping an exhausted swimmer.

	Proficiency Certificate	Bronze Medallion
Age Limit:	None. [Boys of 12–13 years can do it quite easily.]	Over 15 years.
Land Drill:	The whole.	The whole.
Water Drill:	Four methods of rescue, the drowning person to be carried at least 10 yards. Three release methods.	Four methods of rescue, the drowning person to be carried at least 20 yards. Three release methods.
Resuscitation:	Schäfer method.	Schäfer method.
General Swimming:	100 yards breast stroke; 50 yards back stroke with arms folded.	At discretion of examiner.
Diving:	A depth of 5 feet; may be done from the side.	A depth of 5 feet; may not be done from the side.
Theory:	None. [Personally I always insist on some knowledge of the why and wherefore.]	Outlines of the physiology involved in resuscitation.

Experience has proved that, given ability to swim properly on the back, about twelve half-hour drills on land and sixteen quarter-hour drills in the water, distributed over about half a term, are quite sufficient. Weaker members of a class may require more attention. It is no good wasting time with candidates who are afraid to throw their head back in the water, or who adopt the sitting position for the back stroke. Swimming on the back must be learnt beforehand. The land drill is easily done with a large class; for

FIG. 5.—Method of carrying adapted for side stroke.

FIG. 6.—Release when seized by the wrists.

water drill I find twelve or fourteen quite as large a number as can be properly attended to at once. It is neither necessary nor desirable to complete the land drill before commencing work in the water; on the contrary, the sooner the latter begins, the better. With regard to the physiological part, I have found it best to give a lecture of about an hour's duration, and follow it up by regular questioning at subsequent drills. Not much is required; but it is necessary to see that the information is precise, and that members of the class are driven from any refuge in vague generalisations. It is essential to have sole use of the bath or a sufficiently large part at the deep end during the time of water drill. At schools which have their own bath this is an easy matter. Where public baths are used, it will generally be possible to make suitable arrangements without very much difficulty.

FIG. 7.—Release from a grip round the neck.

FIG. 8.—Release from a grip round the body.

Perhaps this is the place to insert a few words of caution. At first a pretty severe demand is made on heart and lungs. If there is reason to

suspect any weakness, the advice of a doctor must be taken. Secondly, in many schools the swimming is left to the drill sergeant. Unless he is a thoroughly competent swimmer and holds the society's certificate, it is better for the life saving to be conducted by one of the masters. In any case the general supervision should be undertaken by one of the staff, who should be in frequent attendance. Thirdly, in some schools only the Medallion examination is taken. This system has the defect of making no allowance for the boy's unlimited capacity for forgetting. It is highly desirable for him to go through the whole course twice at two or three years' interval in order that everything may be firmly impressed on his memory. This applies more especially to resuscitation. Most boys will occasionally do a little work in the water from mere pleasure, but they seldom think of keeping up their knowledge of resuscitation. Lastly, the whole affair should be entirely voluntary on the part of both teacher and taught. This is essentially a matter in which enthusiasm should be the moving force. Most boys who care at all for swimming are anxious to

FIG. 9.—Schäfer method of resuscitation.

enter at the earliest possible date. This need not entirely exclude the granting of slight privileges to successful candidates.

In addition to the above-mentioned examinations, besides a more elementary test, the society also grants Honorary Instructor's Certificates, an Award of Merit, and a Diploma. The first of these is gained by satisfactorily teaching a bronze medallion class. Boys are usually keen enough to gain this certificate as well; indeed, for the past few years I have had the Medallion class largely taken off my hands by senior boys. The Diploma is the highest award known to the swimming world; it demands superlative all-round excellence, and very few have so far been granted. The Award of Merit, with the visible symbol of a silver medallion, is new this year. It is a stiff test, but not beyond the reach of older boys who will take the trouble to train properly for it.

To anybody desirous of taking up the work I would suggest writing to the secretary of the society (8, Bayley Street, W.C.) and asking for a demonstration. This will be arranged if in any way possible, and will immediately rouse interest. The formation of a class is then comparatively easy, but it is desirable to have a select number of the best swimmers only for the first attempt.

In conclusion, it may not be superfluous to say that the Royal Humane Society has a system of training and examination. It is not detracting from the unique merits of this great society to express the opinion that their system is not so good as that of the Royal Life Saving Society. Having carefully gone into the matter, I consider that the methods of the latter are better, its instruction more clearly set out, and its tests more adapted to actual possibilities as well as more searching than those of its elder sister. The two bodies have really different aims. That of the Royal Life Saving Society is to promote knowledge how to save life from drowning. It does not give any recognition of any kind for bravery. The Royal Humane Society concerns itself with apparatus and grants awards for bravery in saving life on land as well as in the water. Its teaching work is only incidental.

AMERICAN TEACHERS: THEIR SALARIES AND STATUS.

By FRED CHARLES, B.A.
Strand School.

LAST year a number of articles appeared in the educational papers of America, all showing general dissatisfaction with the state of teachers' salaries and an earnest desire to improve them on the part of all concerned with education. In attempting a comparison of salaries in different countries, it must be remembered that the purchasing power of money, and so the cost of living, varies immensely. Even in similar towns in England the difference is marked; *e.g.*, the cost of living in Nottingham is 6 per cent. higher than in Bradford, while that in London is 10 per cent. higher than in Nottingham. In the States the difference is even greater, and a very moderate estimate makes the cost in New York twice that in London. In both countries, but far more rapidly in the newer, the cost of living is increasing, but the increase in salaries is in no way commensurate. The average monthly salaries of men and women teachers in public schools in 1888 were respectively 42·47 and 33·95 dollars; they have gradually increased, except for a slight check in 1894 and a rather more serious set-back in 1897, which took some four years to recover, until in 1904 they were 52·21 and 41·96 dollars respectively.

The men's monthly salaries ranged from 149·05 in Rhode Island to 25·96 in South Carolina, and the women's from 73·02 in Arizona to 23·20 in South Carolina. Of the five geographical divisions, North Atlantic, South Atlantic, South Central, North Central, and Western, salaries are smallest in the South Atlantic, where men and women receive 32·88 and 29·57 dollars a month respectively, and largest in the Western division,

where they receive 69·75 and 53·98 as an average. The biggest difference between the salaries of men and women is in the North Atlantic division, where the averages are 68·17 and 44·27.

These and many of the statistics that follow were obtained at the United States Bureau of Education—a Government department which differs from our own Board of Education in that it does no educational administrative work, but merely collects, tabulates, and disseminates information. Salaries have in all cases been left in dollars, as being more convenient, and not involving any other denomination. The rate of exchange is about 4·80; thus 48 dollars is £10; 1,200 dollars £250.

The difference in the salaries of men and women teachers is important, for money is directly and indirectly the chief factor in determining the proportion of such teachers in the schools. A short digression on this subject may be allowed on account of its importance and the trend in the schools of our own country. Mr. Stuart, formerly superintendent of schools in Washington, D.C., wrote in his report, 1904–5: "The number of girls entering the normal schools to be trained as teachers is much smaller than formerly, and for the last two years no boys have applied for admission." The percentage of men teachers in the public schools of the United States was in 1880, 43; in 1890, 35; in 1902, 28; and the latest returns available say that it has now reached 27! In Connecticut, Massachusetts, New Hampshire, and Rhode Island it was as low as 9!! In fifteen other States, including New York, where it was 12, it was below 20. At the other extreme are Tennessee, 52; New Mexico and West Virginia, 54; and Arkansas, 57.[1] The main reason for this overwhelming proportion of women teachers is the salaries offered; small in themselves, but especially small when compared with the large sums that can be made rapidly in other occupations. The country is still new; it still possesses enormous natural wealth as yet untouched; good farm land is so abundant that when land becomes poor there is no need to renew it; all that is necessary is to move on. The men in America are not in any sense stay-at-homes; they have a superabundance of restless energy, and the ceaseless grind of the schoolmaster's life does not appeal to very many of them. These appear to be some of the reasons why the superintendents are so often met by the problem whether it is better to appoint the weak schoolmaster or the strong schoolmistress. Some decide to take the weak man, and more to take the good woman teacher, but in both cases the schools suffer. Discipline is affected—that of the mistresses is dependent on chivalry, which at times fails—and some of the boys of strongest character are found in the special schools, because they cannot be ruled by weak or women teachers. There is, too, an absence of robustness, of ready obedience and recognition of authority. Far too much is done for the children, sometimes through zeal to procure progress, and sometimes, unfortunately, to avoid the friction that would occur if teachers insisted on these youthful Epicureans—who seldom, if ever, come under authority—doing things for themselves.

In the States, as in England, the influx of young people into the teaching profession has been checked, not so much by the small initial salaries as by the poor prospects. When a youth seeks employment he may consider at first the initial salary, but it is unimportant compared with regular increments, a good maximum, and a pension. He requires the assurance that continued and efficient service will be rewarded by a substantial increase of pay. In the States there are few such anomalies as occur in schools in England, where the headmaster may be receiving five or even six times as much as his senior assistant. There are, indeed, an enormous number of grades and ranks for a democratic country! Superintendents, assistant superintendents, supervising principals, principals, assistant principals, heads of departments, and teachers, to say nothing of directors and subject specialists! In Washington, where salaries are below the average, the superintendent received (1904–5) 4,000 dollars; two assistant superintendents, 2,500 each; eleven supervising principals, 2,000 each; one director, 1,500; one assistant director, 1,100; the average in the normal school was 1,047·05; in the high school, 932·81; in the grammar and primary grades, 673·37; and in the kindergarten, 478·24 dollars. In the city schools the number of better-paid appointments is increasing. The present condition can be seen from the following table:

Salary in dollars	Positions	Salary in dollars	Positions
600–700	16015	1000–1200	4025
700–800	11064	1200–1400	3991
800–900	8664	1400–1600	1627
900–1000	4424	1600–1800	1232
		1800–2000	544
		Over 2000	1918

Here are the salaries of principals and teachers in a few well-known cities (they are not selected as having high or low salary scales, but are those that the writer visited last year):

	High-school Salaries		Elementary-school Salaries		
	Principals	Teachers	Supervising Principals	Principals	Teachers
Chicago, Ill. . . .	2800–3000	750–2400	—	1200–2500	550–1125
Cleveland, Ohio .	3000–3500	1000–2100	—	700–1700	475–850
Indianapolis, Ind.	2500–2600	700–1800	1200–1500	700–1200	400–800
New York, N.Y. .	1900–5000	700–3500	—	1440–3500	600–2400
Washington, D.C.	1800	500–1500	2000	675–1500	500–1000

The American public values education highly; it realises that a well-trained youth can earn more than an untrained, and it is therefore willing to spend money on education. Indianapolis, for example, spends one-third of its whole municipal income on its schools; Nottingham, a town not backward in educational enterprise, spends less

[1] See also "Women Teachers in America," by Mr. H. W. Horwill, The School World, April, 1907, p. 124.

than one-sixth. The United States spent 2·99 dollars per head of the population for public education, while England spent 1·99, Scotland 2·02, Switzerland 1·90, Germany 1·75, France 1·09, and Italy 0·41. Of the divisions of the United States the Western spends most, viz., 4·39 dollars, and the South Central States least, viz., 1·14 dollars.

Public bodies, however, are inclined to spend on buildings and equipment rather than on *personnel*, and manual training, in which the engineering firms and other large employers thoroughly believe, fosters the tendency. The percentage of expenditure on education devoted to superintendence and to teachers' salaries, has, since 1890, when it was 65·4, been steadily declining, until in 1904 it had reached 61·4. Of this a fair share goes to the teachers, and the superintendents and educational officials are appointed from their ranks. Generally the teachers are appointed by the superintendent, and can be dismissed by him, but any change in the teaching corps must be reported to the next meeting of the board, to whom the teacher dismissed can appeal against the superintendent's decision, and by whom he can be reinstated.

The teacher's work is usually professional only; there appears to be very little supervision and games' duty; the hours are not long and there is no evening work. Classes, too, are growing smaller; the average number of pupils in attendance to each teacher was, in 1904, 34·7, varying from 27·1 in Maine to 56·6 in South Carolina; the only other district with an average of over 40 was Arkansas, 42·5.

The professional spirit of the teachers is engendered by their training and fostered by the consideration shown them by the authorities; it varies from place to place, and under different superintendents, with the character of the training and the amount of assistance subsequently given. At Indianapolis, for instance (where the writer spent three weeks), intending teachers must have completed a high-school course before they can sit for the competitive examination admitting to the normal school. The first year in the normal school is devoted to such subjects as psychology, child-study, the history of education, and logic. Instruction is also given in manual training, physical training, and art. The next half-year is spent in teaching under supervision. To each student is assigned a class, and over every two students is a director of practice, whose duty is to plan with them their work and to assist them in carrying it out. Successes and failures are discussed, and means of increasing efficiency are devised. During the early part of the half-year the directors teach and supplement the work of the practice teachers. These lessons serve a twofold purpose; they safeguard the classes from the inexperience of the students, and at the same time offer an example, a model on which future lessons may be based.

The directors of practice are selected from among the best teachers in the corps, and the appointments are worth as much as those of the principals in all but the largest buildings. The second half of the year is a period of probation; the teacher works independently, and consults the director of practice only in case of difficulty. During the whole of the year discussions on the method of presenting subjects are frequent.

Even then the teachers are not left entirely to their own resources. At the beginning of the half-year are a number of sectional meetings. Two examples will show their character and purpose. The grade teachers, who retain their own classes (ages six to twelve) for all subjects, met to discuss the art and handwork for the coming semester. The director of art instruction and the director of manual training were present, and gave valuable assistance and advice as to the method of carrying out the work. Both have fixed times each week, when they meet any teachers who want their help. The mathematical teachers of grades 7 and 8 (ages thirteen and fourteen) met and discussed the results of the examination which had completed the work of the previous half-year. The help from above came in this case from the assistant superintendent, who had especial charge of these grades, and from the head of the department of mathematics in the high school. The chief points dealt with were methods of teaching certain parts of the syllabus and changes in the syllabus.

Nor are more formal lectures and classes wanting. In addition to these means, which are exceptional only for their excellence and their popularity, there are others which seem almost untried in this country. Each course of study is preceded by general directions and suggestions, which indicate the main purposes for which that subject is taught and the principles underlying it. For instance, the first of the objects of teaching reading is "To gain power in understanding or comprehending the thought of the printed page." Then follows an account of the ways in which this object can be attained. Fifthly: "To cultivate an abiding taste for good literature. . . . In this way pupils may be given resources in life, and to give a child resources is one of the objects of every good school." In addition to these courses of study, every one of which is far more than a mere syllabus, "Stenographic Reports of Lessons" have been published. These are verbatim reports of what occurred in the class-room with the exception of some minor corrections in the English of pupils. There is a prefatory statement to each lesson showing the conditions under which it was given; the date, the school, the average age of the class, and its preparation, the phase of work shown, and the teachers' plan for the lesson.

Every teacher is allowed to dismiss his class two days a year in order that he may visit other schools. The amount of information possessed by the teachers of Indianapolis indicates clearly that they have visited and studied the schools, not only of their own city, but also of Chicago, where much experimental work is being done under the very best conditions.

One other help extended to the teachers of

Indianapolis is a fund which had its origin in the generosity of a former teacher there. He left a small sum "for the advancement and promotion of free schools in the city." In 1894 the Board of Education for the city formulated a plan to use the income in giving the teachers of the grades special training on the lines most needed. From 1894 to 1902 seventy teachers were benefited by the fund. Some attended summer schools at the universities of Harvard, Chicago, Columbia, and Cornell; others spent a year or half a year at these or other universities or training schools; one went to the teachers' training school at Jena; another to the Kindergarten Training Schools, Berlin. The sum thus spent now amounts to about £350 a year.

The result of all these "helps" is that the teachers in the grades—which correspond to our elementary schools—have a sound secondary education, not a university one certainly, but at any rate a liberal training, well suited to the work they have to do. They feel the consideration shown them, and that feeling engenders a marked professional spirit. The result, then, is a devoted, enthusiastic professional teaching corps, which creates in the schools an atmosphere of which no words can convey an idea.

EDUCATION AT THE FRANCO-BRITISH EXHIBITION.

By A Special Correspondent.

A VISITOR to the Franco-British Exhibition is at once overpowered with the feelings of vastness, immensity, and bewilderment—the last probably predominating, for much is still incomplete, particularly those exhibits which are to find a resting-place between the main entrance in Uxbridge Road and the Court of Honour. The first five sections of the first department are indicated on the plan as being reserved for "French Education," but with the exception of two stalls labelled *Enseignement Technique*, which when in order are to reveal the quality of work done in the lycées and collèges of France, and *Écoles Primaires Supérieures*, which contain a large sample of manual work, both in wood and metal, insufficient was exhibited at the time of my visit to enable anything like a comparative view to be taken. The output of the Écoles d'Arts, et de Métiers, et d'Horlogerie, the work of girls between the ages of eleven and sixteen, and of boys whose age goes to eighteen, is most excellent, and reveals that passion for accuracy and close attention to detail which we associate with all good Frenchmen. Toulon, Dupuy, Nîmes, St. Etienne, Lille, Rouen, have sent exhibits.

The absence of catalogues and guides is a serious hindrance to one who has only a limited time to give to an examination of the various sections. Yet, although the conditions were unsatisfactory, it would be unfair and altogether wrong to create the impression of dissatisfaction; for in an undertaking on so great a scale and so elaborate a plan, one must not quarrel with details which are not yet worked out, but rather entertain the almost certain hope that a second visit will show the fulfilment of what is really but an "early promise."

Turning to the right after entering the Court of Honour, one is faced by a stately building bearing the title "Palace of British Arts and Education." Here again one's patience is apt to become exhausted; for excellent though the exhibits are, some idea as to the general plan and arrangement of the building would facilitate inspection, and dispel that feeling of bewilderment which accompanies mere "sightseeing." Yet the director of this section was most obliging, and offered me information readily in the few intervals of spare time that he had. For to the natural difficulty attending the classification and arrangement of a numerous collection of exhibits, representing very many different districts and diverse types of schools, was added another—that created by the "unnatural" weather. A recent thunderstorm had rendered necessary in some few cases wholesale removals, and in many others, rearrangements.

The frescoes round the interior of this bright hall were all painted by a prominent Italian artist from designs by students of the Royal College of Art. They represent "Education"—with the motto, "Wisdom has been created before all things"—"Industry," "Music," "Science," "Horticulture," "Games and Sports," "Success"; as well as "Fortitude," "Tenacity," and other heroic qualities. They are the presiding genii of the building, and breathe out inspiration and encouragement.

After some little time the plan of the Palace of Education began to unroll itself, and order gradually began to appear. Every type of school and educational institution, from the elementary to the university, finds a place; and those which are outside the "system," if I may so phrase it, have sent large exhibits of the work they do; the products of the work of the schools for the blind, schools for deaf and dumb, the schools for the mentally afflicted, filling one with wonder as well as pity, and bringing out, as nothing else can do, the possibilities open to a teacher and the nobility of his work.

At the lower end of the hall are three very large maps of England, Scotland, and Ireland, showing the number and distribution of elementary schools in the various countries. The omission of the Grampians and other mountain ranges creates a blank space on the Scotland map which does an "injustice to Scotland."

The side of the hall nearer the Court of Honour is devoted largely to the elementary and secondary schools, many of the actual exhibits of the work done in these types of school being drawn from those under the control of the London County Council. Perhaps the best of these exhibits is that of the Domestic Economy Training Department. Two other very interesting items are the

models actually used in teaching, to assist in "bringing home" to the scholars the nature-study scheme, the one a collection of aquatic plants, the other an aquarium with its submerged plants and other conditions necessary for observing the development of toads and frogs. On every stall large photographs of the school, the work of which is there represented, are suitably placed, and in addition views are given of the pupils at work in the various shops, in the gardens, in the cookery and laundry centres, and in the gymnasium, or what have so frequently to act as gymnasia, the school playgrounds. In this last respect we are in strong contrast with the French schools, for in the French section one does not find, and one hardly expects to find, the physical life so emphasised. But in every exhibit from English schools—of every kind—the work done to preserve and increase the health and vitality of the scholars finds suitable expression. The time-tables invariably show two lessons weekly of thirty minutes' duration—one of which is devoted to exercises on fixed apparatus, and the other to what we generally call "drill." Then, of course, beyond this formal work, the physical life of the schools is further provided for in the invaluable games, cricket, football, swimming, &c., and in the case of the Jews' Free School a rifle range and a roof playground.

The work of the Portman Place School for mentally defective children and of the Powis Street Invalid School, as here represented, is most interesting, and provides eloquent testimony to the efforts of those whose aim is to bring brightness and happiness into certain lives by enabling and assisting those, the less fortunate, to add to the common good, and so to their own happiness. One appropriate exhibit from Powis Street was an accurately fretted map, in soft wood, of the British Isles and France, with the chief railways and steamship routes, forming links between the two countries.

The officials of the exhibition have dealt with elementary education in this general way, taking certain schools as the normal type and illustrating from those the typical work in all schools. But on the opposite side of the hall provision is made for the more particular cases, cases in which local conditions necessitate a modification of the general type. These are dealt with in "counties"; and as most of the children in the elementary and secondary schools in all probability will develop into "citizens" of these districts, the strongly marked characteristics of certain counties are made to leave their impress upon the education of the children. Thus, for example, Essex receives very elaborate treatment; and apart from its general type schools, its particular schools are rural in character, in which nature-study predominates. The key map to its exhibits consists of a medium-sized plan of the county, divided into districts for administrative purposes, with the position of every elementary and secondary school marked. Details of the schools, statistics referring to number of pupils and teachers and to their salaries, are posted. Maps and plans of the schools appear, as well as of the school gardens and cookery centres. This exhibit is a good example of the handling of a universal problem modified by local conditions.

Again, Northampton, in addition to what may be called the ordinary and expected exhibits, provides several good and complete examples of how local knowledge may be systematised and made the basis of school work. Two collections call for special mention: that of the common weeds found in or near the school gardens, and that of local grasses, both of which have been collected and mounted by the scholars themselves. The domestic side is also strongly emphasised; and in the upper class, particularly in the technical schools, samples of the work done in the manufacture of boots and shoes in its many stages are prominent. Adjacent to these stalls provision is made for the display of work accomplished by the Government Departments in their own schools—the industrial schools of the Home Office and the Local Government Board, &c.

The section allotted to Scotland is comparatively small, the agricultural colleges, the art schools, and the technical schools occupying the greater place. A feature of the Irish portion of the exhibition is a diagram illustrating the correlation of education in Ireland, showing at a glance how pupils from the elementary schools can proceed to classes for trade preparation or into wider apprenticeships; to the secondary schools, whence they may be drafted into the industrial world or enter the municipal day technical institutes, and so become qualified for higher positions in the industrial life of the country. How the favoured few may rise through the university colleges to the fuller professional life is also indicated. The exhibits of the agricultural colleges overwhelm all else.

The upper part of the hall is reserved for the universities, Sheffield on the right, London, Oxford and Cambridge in the centre, and Manchester on the left. The public schools and the older universities are left largely to themselves, their advertisement here being only of small moment, though almost every sphere of their activity finds expression in the collections of pictures and photographs. By far the largest share of the exhibition is given to Manchester, and Victoria University. A large and elaborate diagram illustrating the system of scholarships and bursaries offered by the Manchester Education Committee is given a prominent place. The work done by each of the departments, access to which can be gained through bursaries and scholarships extending from the elementary school, to be obtained in competitive examination, is displayed. It makes perhaps the most interesting and informing section in the Hall of Education—beginning with the infants in their games, following the routine of the elementary and the higher elementary school, noting the provision made for defective children in such institutions as Swinton House, where a good deal of tuition is given in the open air,

observing the pupil-teachers at their work, first in the preparatory classes and later in the colleges, and finally the students in the textile and industrial departments of the technical school. Here, as elsewhere, specially arranged cases enable one to examine, freely and easily, specimens of paper work in every grade and in all subjects, and a fairly complete idea is obtained of the success with which these many departments exercise their functions.

The object of the whole exhibition is exemplified in this Palace of Education—to let the world know what we are doing and what we attempt to do for the rising generation, and so to attract sympathy to the arts of peace. The many educational centres meet on common ground with a common purpose—that of witnessing each other's work, and learning one from the other. But the greatest triumph of all will be achieved if we but consent to greet with friendliness, and examine with sympathy, the offerings which are being laid on the same shrine by our French friends. Anything which will tend to convince English people that we, as a nation, owe a good deal of our prosperity to other peoples, that we have much to learn from others—in short, any knowledge that will break down our "narrow insularity"—is to be welcomed. A sympathetic comparison of educational work, methods, and systems will be of inestimable benefit. *Aidons-nous mutuellement* says a motto in the French section.

SCHOOL JOURNEYS.

Their Organisation and Educational Value.

By C. J. Rose,
Kentish Town Road School, London.

TRUE riches consist not in what is possessed, but in what is enjoyed; and, in future, education should make our children rich in the true sense, if it gives them an increased capacity for enjoyment by stimulating the power of imagination and the spirit of appreciation, leading them to use their powers of observation on the beauties and wonders of nature, as well as on the many historical landmarks left by man or other forms of life during the past. With these and other aims in view, a series of school journeys has been carried out with success during the past three years at the Kentish Town Road L.C.C. School, London, by the headmaster, Mr. G. G. Lewis, and his staff.

The journeys have been of three typical kinds:

(*a*) The half-day trip in school time to a near point of interest.

(*b*) The Saturday excursion to a more distant point.

(*c*) The long-distance journey, when a selected district, as that of the Wye Valley or the Isle of Wight is explored carefully for a week or longer period.

For the short journeys in school hours permission was obtained from the Board of Education to visit Hampstead Heath as a "place of educational interest." A scheme of work[1] in outdoor geography and nature-study was drawn up, and is now used for these excursions, when one or two classes go out each week, as the weather permits.

The Saturday excursion co-ordinates with those in school time by providing an opportunity to visit more distant places, and by being used to obtain specimens and material for nature-study and geographical and historical work at school. The pond-dipping excursions, for instance, replenish the school aquaria.

Finally, the long-distance Easter excursion for eight days, and of which this article mainly treats, is attacked by both teachers and scholars as the consummation of a course of work which has not only enabled them to read "sermons in stones," but has made every walk abroad a real pleasure in life. The amount of educational work done by the Kentish Town boys would be impossible in a school unaccustomed to field work, for children take some time and practice to acquire that discipline which shows itself in the ability to move quickly from point to point, in interested attention, and the power to enjoy what nature has to show them without becoming unruly.

Intending organisers would therefore do well to provide some preliminary training of the sort described, for it adds much to the enjoyment of the week's trip if the children are self-reliant and require no visible restraint. Also on no account should the work be attempted single-handed, for then the burden of sole responsibility and the risk of having to leave the children by themselves destroy the enjoyment of both master and children.

This year at the Kentish Town school a week's holiday in the Isle of Wight was planned, being quite new ground, as former trips had been to the Welsh border. Three teachers, respectively called organiser, treasurer, and house-master, divided the work between them, and though the titles sufficiently indicate the respective special duties, yet much general work was entailed, in which all three worked harmoniously together. The cost was first roughly ascertained, specially cheap rates being allowed by the L. & S.W.R., with permission to break the journey at Winchester going down and at Portsmouth on return. A place to board a large number was secured at Shanklin for 10*s*. each per week, while a margin was allowed for printing a guide-book and working expenses, bringing the total up to 20*s*. per boy.

Before embarking on the guide-book, the organiser went over the ground to be covered, collecting material not only by personal observation, but from friends and local gentry likely to take an interest in the boys, or having interesting places to visit, while at home the Ordnance Survey maps, Jermyn Street and South Kensington Museums were drawn upon. The L.C.C. also allowed a small special requisition for papers, inks, and so on. The result was a book of sixty

[1] See end of article.

pages, including, amongst other information, "notes, with sketches, maps, or plans, on Winchester and its cathedral, Shanklin, Portsmouth, defence, types of vessels, harbours, Carisbrooke Castle, the Roman Villa, architectural styles, stratification, denudation, contours, strata and fossils of the Greensands and Tertiaries, stars, animal and plant life, plant ecology, seashore flora and fauna, with many physiographical pages on landslips, chines, pebbles, waves, tides, and lighthouses. Pages were also devoted to "What to Take," the outward and return journeys, grace, evening hymn, marks, and report, while lists of the party and of friends assisting were printed on the inside of the covers.

The scheme provided interesting days at Winchester—for cathedral and historic remains; Shanklin Down; St. Catherine's Point—for lighthouse; Blackgang chine; Brading—for the Roman Villa and the eastern end of Wight; Freshwater—for Alum Bay and the western end of the island; Ventnor—for undercliff; and Portsmouth—for dockyard, harbour, and *Victory*.

The pages were thought out mainly by the organiser, and submitted to his colleagues for approval and criticism, and then were printed on the hektograph jelly with coloured indelible inks. Two copies of each page were taken, and 120 copies were thus obtained for the use of the fifty children going, together with teachers, helpers, and friends.

Some difficulty may be experienced in arranging the pages, but it must here suffice to mention that an index should be made, and opposite pages printed together; then comes the sorting, folding, and sewing. A stiff parchment paper was placed outside, and a final covering of art vellum glued on this, the books being then sent to a friendly printer to be guillotined.

Meanwhile the headmaster had been busy making raised contour maps of the whole island, and of the district near headquarters, the different heights being enamelled in colours. These are taken away on the trip, and are extremely useful for reference at headquarters during the week.

Since all this work is done at school, or in the dinner hours, the whole of the children are keenly alert to assist or watch the progress made, and the lads who are going eagerly study the pages of their home-made guide when it is finally put into their hands. Here, then, is a means of securing a large amount of material to be used in the geography, nature-study, science, and history lessons, and of applying the stimulus of "What I shall see," to create the desire to understand.

A thoroughly organised journey involves much more work than has been described, for there is a large correspondence to be dealt with, negotiations with small railways, arrangements for suitable boys to sleep together, appointment of monitors, luggage, and, in fact, a mass of detail, all of which may or may not present obstacles; but it is proved that, in spite of this mountain of work, the results amply repay the trouble, cost, and time.

Before dealing with these results, a word as to discipline and marks is necessary. One page of the guide-book is ruled to record marks for "conduct," "cleanliness," and "observation" each day. If a boy should be rude or not neat, he is told to take so many bad marks, and these are subtracted from the total given him in the evening after a review of his behaviour by the masters. This method works excellently, though it is well not to give maximum marks even to those lads who have been passively well-behaved, so that they may be stimulated to be willing, good comrades, and in general helpful to teachers, fellow-scholars, and servants. Opportunities occur by which a specially bad case can be punished, such as missing an evening entertainment or staying at headquarters for the day. Though the writer has never had a case deserving such treatment, yet instances may arise with lads who are away for the first time. The observation marks are assessed by means of a daily *viva voce* examination on the previous day's events. If the teachers take this in turn, and at any available opportunity, such as an occasional rest by the wayside or in the railway carriage, it ensures that every boy shall have a ten minutes' chat with a teacher, and that no quiet boy shall be overlooked. Besides, the boys are led to reflect on what they have recently seen, while wrong and vague ideas can be corrected. A prize is given to the top boy each day, and three special prizes for the whole week.

On the return to school, which will show a striking physical contrast between the boys who go and their less fortunate fellow-pupils, it is necessary to ensure that a record of the week's work shall be permanently secured. The boys, therefore, are not only asked to send letters of thanks to all who have been kind to them, but busy pens begin recording impressions for the newspapers. These, with an article from one of the masters, published in the local newspaper of the district visited, make a good record. Any photographers with the party can be busy developing a pleasing and popular record of each day. If the photographs are mounted with the newspaper reports, a neat souvenir is formed.

Note-books are collected and examined, and finally each boy has written in the report page of his guide-book a full and detailed account of his character as formed by each teacher. This is sent to the parent to sign, and the book then forms a record of an event in the lad's life, to which he may return with pleasure and profit; while he can endeavour to live up to, or improve, the estimate of his character which his teachers have formed of him during a week's comradeship.

The school journey should become increasingly popular, for while its purely educational uses are many and far-reaching, its physical and moral influence on the life of the child is not to be despised. The moral character is developed by acts of kindness to comrades and teachers, the necessity of sharing and helping one another, and the partaking of pleasure without any debasing tincture of

hooliganism, thus fostering habits of good fellowship, self-reliance, and unselfishness. The modern lad and young man often spend their holidays in aimless and uninteresting (though often quite as expensive) idleness, and it is this lack of purpose that makes them drift into dangerous or degrading pleasures. The school journey aims to alter this by teaching the future men and women how to spend a holiday rationally and happily amid natural surroundings. A liking for the free air is also acquired, acting as a check on the increasing sedentary habits of the town child. Those children who are accustomed to the journeys will rarely be found in close street or home on a half-day or fine summer evening—you will more likely find them at the pond-side in the park.

The educational advantages may be summarised briefly as follows:

1. The geological, geographical, historical, and natural history facts are acquired in the best possible method, for the children can easily be led to do most of the questioning, often discovering the answers for themselves.

2. Material is thus furnished for work in school and for discussion and reflection in the home, and cements the home and school life with a living interest.

3. The rock, plant, and animal specimens replenish the school museums, forming the nucleus of many interesting lessons. It is a mistake to bury these specimens permanently in the museum; it is better to show them one by one in a prominent position.

4. A love of nature in both its larger and smaller aspects is imbued, and the observation of natural objects becomes a pleasure brightening the whole future life of the child.

5. The scholars who go on these journeys regularly may be distinguished, with few exceptions, by their manners and intelligence, giving a distinct tone to the class where they are in the majority.

6. The interest which the excursions create invigorates the whole school, for all watch the progress made, and much is learnt from returning comrades.

The imagination has only to picture the interesting chats with the lads, the opportunities for humorous and healthy recreation, the delights of ascending hills and mountains and exploring caves, and the unique conditions afforded for stimulating comradeship, with the consequent development of character, to be certain that the uses of this mode of education are real and important, giving the school journey a place in the front rank of educational methods.

The following scheme of work (inserted by permission of Mr. G. G. Lewis, headmaster of the Kentish Town Road School) is referred to above. It serves to show the kind of foundation upon which the extended work of the longer journeys may be built.

Standard I.—*Trees.* General outline, bark, leaves, and fruit of oak, Lombardy poplar, chestnut, plane. To be sketched and described at different seasons of the year.

Geography. Lessons on lakes, on islands, capes, bays, hills, and streams. Visit to the Zoo.

Standard II.—*Trees.* General outline, bark, leaves, and fruit of elm, plane, willow, poplar. Oak and chestnut also to be recognised when met. All to be sketched and described at different seasons of the year.

Geography. Hills and their outlines, rivers, tributaries, valleys, and watersheds. Use of a map in finding one's way. Visit to the Zoo.

Standard III.—*Trees.* General outline, bark, leaves, and fruit of sycamore, ash, beech, larch, Scotch pine. (Trees taken previously to be recognised when met.) To be sketched and described at different seasons of the year.

Geography. Work of a river in excavating valleys and making scenery. Measurement of width and depth of Fleet Brook at different points. Rocks of Hampstead Heath and the vegetation they support. Visit to the Zoo.

Standard IV.—Study of the trees on some part of Parliament Hill to provide data for (*a*) map showing position of chief trees; (*b*) seasonal chart showing state of trees at different times of the year.

Soils of the Heath and their flora. Worms, moles, &c., as soil-makers. Pond dipping. Estimation of speed of a river.

Visit to South Kensington Natural History Museum. Visit to the Zoo.

Standard V.—General study of the trees of the Heath. Soils of the Heath and the plants they support.

Sheep, hay-making, clouds, pond life.

Visit to South Kensington Museum. Visit to the Zoo.

Standards VI. and VII.—The rocks and scenery of Hampstead Heath. Contour lines. Recognition of all the common trees on the Heath. Tree map of some special portion.

Visit to South Kensington Museum. Visit to the Zoo.

THE SCHOOL OF MY DREAM.

By Mary Ridout.

"GRANNY, I'll make you a cup of most delicious gruel for your cold."

"My dear," I said, "Gladys, your cook, will do that. Haven't you any lessons?"

"Oh, no; I never do lessons at home."

This seemed very shocking, for when I went to school early in the twentieth century I was proud to be always doing lessons, and I gently suggested to Sara that it was so important she should know something, she had better read a little history while Gladys made the gruel.

"But she can't make it so nice. I always make gruel for Dads when he has a cold. We learn how to do it at school."

"My dear child, I'm afraid you can't know much if you do no lessons at home and cooking at school. What are we coming to in these days?"

"But it's lovely; we have one whole afternoon every week for cooking. We have only learnt yet how to make cocoa and coffee, and arrowroot and gruel. Next term we're going to make all kinds of bread and dough buns, and we have to write out exactly what we've done in each lesson and explain everything, you know. Oh, Granny, why do you laugh like that? I suppose you knew all

about these things long before you were eleven; you used to do so many lessons."

"No, indeed," I said; "I used to do French translation and algebra. It doesn't matter about cocoa and coffee so long as Gladys brings them when we want them. But I should like to see this modern school of yours; I'll write a note to Miss Putnam and ask if I may walk round one morning. In the days of our high schools things were very different. Ask your maid, Phyllis, to bring me my spectacles and writing things."

"I'll get them, Granny. Phyllis has gone to an evening debate at our school—she's going to discuss with a lot of nursemaids how to treat a screaming baby. But I'll write the letter myself; then I needn't fetch the specs."

"You, my dear," I said with surprise; "why we must send a very polite little note, you know."

"Of course," said the bumptious child, for Sara is only an ordinary little girl—not like George, she takes after her mother—and she took her stylo from her belt, a writing-case from the side table, and sat down to write. I watched with many doubts as to the fitness of the production for the letter-box.

In a few minutes Sara handed me the letter to read, and ran to fetch my spectacles. The writing was so clear that I had almost finished reading it when she arrived. It was something like this:

Dear Miss Putnam,

My grandmother is staying with us for a few weeks. She wants to understand about all the work we do at school. Will you let her come to see you one day while we are having lessons?

Your affectionate pupil,
SARA MARKS.

"All right, dear," I said; "that will do." I thought it would not be good for her to know what I really thought about it.

"Do you often write letters, Sara?" I asked, when she had put her letter in the box.

"Only once a week; but before we post it Miss Sheeney reads it to see that it is quite perfect."

"But surely you don't post the letters you write at school?"

"If the letter is perfect we post it to whatever friend we've written to; and, oh, Granny, do you know, Jane and Anne and I are allowed to write the orders for stationery and seeds and things we want at school, because our letters have been posted every week this term. Isn't it lovely!"

This certainly is a very new-fangled school, I thought; but I must own I had noticed that Sara always explained her meaning without saying things more than once, and without any long words, except once, when she was telling Gladys that cocoa is more nourishing than coffee, and talked about "nitrogenous substances," or something that sounded like a chemistry lesson.

"That's a pretty little writing-case," I said, as she was putting away her papers. "Where did you buy it?"

"I made it, Granny. You see, it is a design made up from the inside of an apple. You see the five divisions? We learnt about apples at school, and in the drawing lesson we made this design out of the cross section, and worked it on the linen, and then fixed it together with cardboard. Isn't it cute, Gran?"

"Very nice, my dear, very nice. Now I suppose you had better call Phyllis to put you to bed."

"I put myself to bed. Didn't you when you were eleven?"

"Yes, I suppose I did," I said; but I did not tell Sara how often I was found dirty after dawdling in the bath-room for an hour, because I was so tired and excited after hockey and Euclid riders.

But my surprising granddaughter ran out of the room, saying, "Now for your gruel, Granny; then I'll go to bed."

I have visited Sara's school, and many a lesson did I learn, old woman that I am!

At eight o'clock in the morning all the girls gathered in a large hall, and after the hymn and prayer Miss Putnam told them about a collision that had taken place in the Channel the day before. She explained how a passenger boat had sunk when run into by a steamer carrying coal from Cardiff to Havre, and how nearly all the passengers had been saved because the crew behaved in a quiet, orderly manner and obeyed orders. Three times in the same simple words Miss Putnam told the story. Then she sent the girls to their class-rooms to write an account of the event in their school diaries. Sara told me afterwards that they generally have some bit of news to write about, and that the teachers help them as much as ever they need, because they are not allowed to have even one fault in their diaries. When I said it wouldn't be fair for a teacher to help one girl more than another, the child looked bewildered, and then said, "Well, nobody *likes* to ask for help; but the stupid girls have to, because we should spoil our diaries if we ever made a mistake." While the story was being written Miss Putnam invited me to see the garden. As it was September there were dead leaves about, onions laid out in rows to dry, clumps of sweet-peas with the pods of selected flowers tied in coloured ribbons; there were apples not yet gathered and string-beans still bearing. There were clumps of golden-rod among gooseberry bushes, and sunflowers behind a big bed of brussels sprouts. Thinking this must all belong to the gardener, I asked where the children's beds were. Miss Putnam said: "It all belongs to the children—they do everything. One of our mistresses teaches them, and the elder girls, who already know how to do many things, teach the new ones, and so they get through a great deal of work."

"But they surely cannot dig," I said; "it must be such heavy work."

"I don't think it is too tiring; certainly it is not so exhausting as the hockey their grandmothers used to play; but," smiling and a little

embarrassed, "perhaps you remember those days."

"Yes, I used to get very excited over hockey. I should have thought gardening very dull, especially growing onions. Why do they grow all these vegetables?"

"They work in the garden to make money," was the reply.

"But—this is a new idea to me," I said. I was trying to be polite. It seemed a shocking thing to let these girls work for money.

"Perhaps Sara has not told you about the School Guild. Most of the girls in the upper school belong to a club which they have organised among themselves. They do many things which need money; so all the garden products are sold to supply the funds."

"I suppose the object of the club is to maintain a cot in a hospital?" I suggested.

"The girls do many things. They wanted to do something for the poorer children who play in the streets. So every evening three of them are on duty in the hall from five to eight to see that all goes well, while the street children play. The money for lighting and heating during these hours, and for occasional buns, comes out of the club funds. Then, last week, they bought Professor Dale's new book on the latest discoveries in astronomy, and I hear there is a secret scheme brewing among the trustees to spend all takings for the next six weeks on a present to one of our girls who lost her father the other day."

"But when do the girls find time for all this?" I asked.

"There is always plenty of time. We have no hurry in our school. You see, we are not pursued by examiners, as you used to be."

"No; but how much time do you give to lessons?"

"Everything is a lesson," I was told, "because everything is done heartily; the girls know what they are working for; but I see it is nine o'clock, and they will be doing arithmetic now. Would you like to see our class-rooms?"

We then went into Sara's room. Some of the children looked up as we entered, but turned eagerly to their work again.

"What are they all so busy about?" I asked.

The teacher told me they were finding out how many sheets of cardboard they must buy for box-making, and how much it would cost if they gave 6½*d.* a dozen for them. She had just been telling them how they could make boxes in which to send away their flowers, and they were so "mad" about it that they were quite excited over the calculation.

"And what are all these beautiful books?" I had next to ask, for I saw a pile of hand-bound manuscript books carefully ornamented with hand-painted designs.

"These are the children's 'day-books.' The binding and designing and painting are done by the children themselves. Only perfect work is allowed in these books. When they have finished the sum they are doing now they will write out on their paper a copy of the working with a full explanation of what has been done. When this is perfect and passed by me, it is copied with the utmost care into the day-book. Some children make few entries; others manage to get an entry for almost every lesson in the day."

"Then do they have no exercise books to write in?" I asked.

"The day-books are the only records of work done. All practice work is done on paper and destroyed."

I was next taken to a reading lesson; there were twenty little girls of about ten years old reading "Stories of the Chosen People." Here again I noticed they were all much too interested in their reading to take any notice of me, or to need any call to attention by their teacher. Each child in turn stood facing the class and read clearly and with such good expression that it was plain they were all enjoying the story and forgetting themselves and everything else. Presently the teacher said, "Now summarise," and they all took pencil and paper and began to write. They produced each a few short sentences, summing up the story they had just read. The teacher helped the more backward children, and soon there were a number of fair copies ready for insertion in the day-book.

"We spend an hour in this way every morning; it is a very favourite lesson," said the teacher to me while the girls were collecting the books and preparing for the next lesson, which they called gardening demonstration and I should have called botany.

"But I do not understand how you find time for so much reading."

"In the upper classes they read only three times a week, and with it they combine systematic language study and the writing of essays."

"But do you teach no French or science in this school?" I next asked.

"French is not begun until the age of fourteen, and then they work at it for two hours a day, and we find that in two years they can use it almost as well as their own language; but they learn it by using it, not by books of French grammar."

"Surely, though, you teach science?" I asked anxiously.

"We have to be always teaching science; there are so many things to explain in connection with the gardening and cooking and housework. Then one of our teachers takes each class in turn for a walk on Wednesday afternoons. They do simple surveying (you will see some of the day-books have maps of the neighbourhood), and after the walk there is always a class for studying and explaining some observation; in this way elements of many branches of science are introduced."

I understood what was meant when I looked through the day-books of some of the elder girls. There was a note of observation of the waxing moon in the evening, followed by a full explanation, with diagrams, of the phases of the moon. Another week there was an explanation of the

work of the river in wearing away the valley. Later came a note about dew and hoar-frost, with its explanation following.

But when I made anxious inquiries for the geography and history lesson, I was more surprised than ever to hear that there were no such lessons at all in the lower school. I was told that the children all read a great deal of history in their reading lessons, and that Miss Putnam was constantly referring to the past in her talks to the girls about current events; so that they knew a little about how present institutions had grown up before they reached the fifth form and began to study history proper; and as for geography, they were constantly using their atlases to find places referred to in connection with other work or in the daily paper, but they had no time set apart for learning names of places.

"I begin to understand now how it is you are never hurried," I remarked as I met Miss Putnam; but she was evidently thinking about her housemaids, and pointed out to me two girls in pink overalls and mob caps turning out the library. "These are my housemaids for this week," she explained; "they do nothing else every day this week but keep things clean and well-polished. All our girls have to go through 'housemaid's week,' and they seem to look upon it as a wondrous treat. But you would like to see our school law-court before you go," she added, and led me into the sixth form class-room, where the girls were "trying a case." One tall, grave girl was judge; another, looking very red and excited, was the plaintiff; a younger and rather nervous girl was defendant; every one had some duty to perform on the case. The plaintiff was a mistress who brought a case against defendant, a servant, for leaving her service without notice, and refusing to pay her month's wages. The counsel for each side took up the case, and presently the jury brought sentence against the defendant.

"We do this occasionally," explained Miss Putnam, "as we find the girls in this way grasp very quickly the points in common law which they may need to know, whereas we might spend hours studying books of law, and leave the girls as helpless as ever."

"They certainly seem to enjoy it," I replied; "but again I am at a loss to understand how you find time for these things."

"There is always time to do a few things well, and more than a few we do not attempt. The last hour, from eleven to twelve, every Wednesday morning is given either to a case or a debate; very occasionally to the reading of some article of special interest to the girls. Then we have in the sixth form a course of study in child life and the principles of child training. All this comes in the morning's work. The afternoon, from two to half-past four, is spent in such occupations as needlework, cooking, gardening, drawing, and other forms of hand work."

"You have a gymnasium, I suppose? I did not notice any apparatus in the hall."

"That is another thing we dispense with. Every day there is a quarter of an hour's drill in the middle of the morning, and the gardening supplies the most varied and healthy activity. Have you not noticed how well our girls carry themselves? That is because all carrying work in the garden is done on the head. We have little padded baskets on purpose, and you may see loads of potatoes, stones, or weeds being carried about in this way."

I thanked Miss Putnam for spending so much of her time explaining things to me, and said "Good morning."

"Isn't our school jolly, Gran?" said Sara when she came home.

"It certainly is 'jolly'; at least, you all seem jolly. How much you learn I'm not so sure about. I must think it out."

THE FIRST INTERNATIONAL MORAL EDUCATION CONGRESS.

By Prof. J. W. ADAMSON, B.A.
Vice-Chairman of the Executive Committee of the Congress.

THE competition for attention, which would seem to be one consequence of the multiplication of "conferences" of all sorts in the present year, ought not to prove unfavourable to a congress which proposes to consider from practical points of view questions whose solution is of the first importance to all civilised nations. In England least of all is a Congress on Moral Education likely to lack an intelligent and sympathetic membership. For character is that which the Englishman most respects in a man; that the highest aim of education is the formation of character has been the accepted creed of English schoolmasters since times that were old when Herbart was born, and English schools have demonstrated in many ways how character may be formed and moulded.

The choice of London as the meeting-place of such a congress would therefore be appropriate even in a year less international than 1908. But the circumstances of the present time make the choice still more fitting. Many of our foreign visitors come from lands where earnest attempts are being made to effect the education of conduct by means very diverse from those familiar to ourselves. They are no doubt as well aware of whatever failures they have suffered as they are conscious of success. Where host and guest have so large a sphere of common interest, and each has much to teach the other, their meeting for frank discussion of the practical sort should ensure a large measure of profit to both.

Those who during the past five or six months have organised, and still are busy organising, the First International Congress on Moral Education desire above all things that the meetings which will be held in the University building at South Kensington in September next shall be practically

helpful to all, and so free from party spirit as to be offensive to none. It is not possible within the limits of this brief article to present in any fulness the programme already drafted; it will be found to be a serious attempt to represent all schools of thought which deal with its special topic. Those who favour direct moral instruction, and those who prefer that that instruction should be indirect; those who regard religion as the indispensable medium or sanction of moral training, and those who believe that it is possible to give such training apart from religious education; those who advocate teaching by means of "subjects" having a very specific moral intention, and those who base their trust upon the assimilation of the curriculum as a whole, or still more upon the school *ethos*—all, it is hoped, will take an active part in a congress whose arrangements are planned to that end.

It may seem that an excessive claim is made on behalf of this conference when it is said that civilised nations in general stand to profit from its deliberations. But the support already promised by administrators, thinkers, and teachers actively engaged in their profession goes a long way to sustain the claim; and it is upon these classes of persons that the eventual effectiveness of all such conferences must turn. The Ministers of Education for England and France are joint patrons with their *confrères* of five other European States and of Japan. The list of vice-presidents contains names representative of the universities of Great Britain, France, Germany, Austria, Denmark, and of the educational administrations of the United States, Italy, Switzerland, Belgium, Hungary, and other countries. The general committee is a very numerous body of persons recruited from the names best known in education throughout the world, east and west; its president is M. Léon Bourgeois, and its vice-president Prof. W. Foerster, of Berlin. The executive committee represents all grades of educational practice in this country and most schools of opinion; its chairman is Mrs. Bryant.

A congress which appeals to so influential, numerous, and varied a body of adherents may be expected to approach its central question by many different avenues. The four days of the congress permit the holding of eight sessions. The first will include the president's address, which will be followed by papers dealing with the principles of moral education as these are conceived by M. Boutroux (France), Prof. M. E. Sadler, Prof. Foerster (Germany), and Prof. Adler (New York). The second session will consider the ethical aims, means, and limitations of the various types of schools; discussion thereon will be initiated by Dr. Gray, of Bradfield, Mr. David, of Clifton, Dr. Gow, Abbot Gasquet, Miss Burstall, Mr. W. A. Nicholls (president of the N.U.T.), and others. Mr. Arnold Rowntree will speak on the "Adult School," and Prof. Eickhoff, of the German Imperial Parliament, will expound the social, moral, and educational significance of the movement in favour of the common school (*die Einheitsschule*).

The third session (September 26th, morning), under the rubric "Character Building by Discipline, Influence, and Opportunity," covers a number of topics ranging from "The effective forces in school government and their agency in the building of character" (Mrs. Bryant) to such everyday aspects of morals as are involved in children's literature and play. Among the well-known contributors in this session are M. Marcel Charlot, Sir Arthur Hort (Harrow), Dr. W. Münch (Berlin), and Mr. Percival Chubb (New York).

Prof. John Adams will open the fourth session (September 26th, afternoon) with a paper on "Ideas as Moral Forces," thus setting the key for a discussion on the problems of moral instruction proper. He will be followed by M. Belot (Lycée Henri IV), Dr. Hayward, Mr. Keatinge, Mr. Spiller (general secretary of the congress), Mr. Arthur Sidgwick, Mr. G. P. Gooch, M.P., Miss Alice Woods, Canon Glazebrook, Miss von Wyss, Prof. Armstrong, Miss Ravenhill, Mr. F. J. Gould, Mr. F. W. Rowe, and Mrs. J. Hopkinson (Swanley); the curriculum at large will be canvassed with some fulness by this body of speakers.

The two sections which form the fifth session (September 28th) should prove of great interest. Section A ("The Relation of Religious Education to Moral Education") has a particularly strong company of spokesmen in the headmasters of Eton and Mill Hill, Father Maher, of Stoneyhurst, Father Sydney Smith, of the same Society, Miss Ottley (Worcester), the veteran Canon Wilson, Rev. Morris Joseph, and Prof. Muirhead. The "Special Problems" of Section B are too many for separate mention; amongst the speakers may be named Miss Clara Grant, Rev. J. H. Flower, Mr. J. L. Paton, Mr. Devine (Clayesmore), Mrs. Kimmins, Sir John Kirk, and Prof. Tönnies. The gentleman last named deals with a grim topic, happily not familiar in these islands —*Schülerselbstmorde*. "Systematic Moral Instruction" (sixth session) will naturally deal exclusively with method. Mr. F. J. Gould will consider "A Central Conception for Moral Instruction," and the session will conclude with papers and discussion on the teaching of "special moral subjects."

The morning of the last day of the congress will be devoted to the consideration of the right relationship of moral education to education in general; the promised contributions of M. Ferdinand Buisson and Mr. Cloudesley Brereton should prove of exceptional importance. In the afternoon, the discussion will turn on the varying conditions of age and opportunity which largely determine moral education from infancy to adolescence. Tuesday's sessions will also include a business meeting to consider the manner in which the "Proceedings" of the Congress shall be published, the holding of the second Congress, and a proposal to institute a journal

and an international bureau devoted to moral education.

There would appear to be but one obstacle to the complete success of a gathering the deliberations of which should be fully fraught with good to education. The foregoing meagre outline of the arrangements already made is a token that the organisers of the congress have been busily occupied up to the present; their labours are by no means ended, and their readiness to work is unimpaired. The members of the executive committee have given energy, time, and money; nevertheless they are not free from anxiety respecting finance. The readers of THE SCHOOL WORLD are urged to support them by applying at once for tickets of membership; if they can also send donations or enlist the aid of wealthy friends, there is plenty of room for the exercise of liberality. Promptitude in giving will do much to relieve from anxiety a number of men and women who have been spending themselves freely in a cause which they believe to be one of great public usefulness.

THE NATURE OF ELECTRICITY.

By G. H. WYATT, B.Sc., A.R.C.Sc.
Emanuel School, Wandsworth Common.

THE physics of gases is in a much more advanced stage than that of liquids or of solids, and the more obvious reason for this consists in the fact that the constituent particles of any substance are separated from one another to the greatest extent in the gaseous state. Problems concerning gas particles are, therefore, more simple in their nature, for to a considerable extent it is found possible to neglect mutual actions and to consider more especially those of the individual particles or molecules. It was a matter of prophecy with Clerk-Maxwell that study of the electrical properties of gases would lead to important discoveries concerning the nature of electricity, and this prophecy has been fulfilled.

The evidence for the modern theory as to the discrete nature of electricity is derived from sources which may be distinguished as: (1) the process of electrolysis; (2) the effects produced by a moving charged body; (3) the conduction of electricity through gases.

ELECTROLYSIS.—Faraday's laws express the experimental fact that a given mass of matter set free in the electrolysis of liquids is associated with a fixed quantity of electricity. The quantity of electricity conveyed by any one element is proportional to its valency and is constant in amount for one equivalent of any element. If one atom of hydrogen be taken as the standard, then the amount of electricity associated with it may be taken as the unit of electricity, of which twice the quantity is conveyed by a dyad atom, three times the quantity by a triad atom, and so on. The charge on one monad atom was referred to as a natural unit of electricity in 1885 by Sir Oliver Lodge. It is now known as an electron. Multiples of this quantity are known, but not fractions.

Taking the mass of a hydrogen atom as 10^{-25} gramme, and the charge on 1 g. of hydrogen in electrolysis as 96,600 coulombs, or approximately 10^5 coulombs, then the charge on one atom of hydrogen is $10^5/10^{25}$ or 10^{-20} coulomb; or, since 1 coulomb is 10^{-1} of a c.g.s. unit, the atomic charge for hydrogen is 10^{-21} c.g.s. unit.

The ratio e/m for hydrogen, that is, the ratio charge to mass for the atom, is therefore $10^{-21}/10^{-25}$ or 10^4. This value is of the same order for all substances when separated from solution by the process of electrolysis. Its importance will be seen later.

A MOVING CHARGED BODY.—It was shown by Prof. J. J. Thomson in 1881 that under certain conditions a body charged electrically possesses inertia in consequence of the charge, this "electrical inertia" being in addition to the ordinary "mass inertia" of the body. If the charged body be moving with an increasing velocity, the electrical inertia opposes the motion. On the other hand, if the velocity be decreasing, the same property opposes the decrease, or tends to preserve the value of the velocity.

The value of the electrical inertia in the case of a charged atom as understood to exist during electrolysis is excessively small, being, in fact, about the one-hundred-millionth of the weight of a hydrogen atom. If, however, the same charge were given to a particle one hundred thousand times smaller than the hydrogen atom, the electrical inertia would increase considerably and rise to the value of the ordinary inertia or weight of one-thousandth of a hydrogen atom. In other words, the unit quantity of electricity as defined above, if it were concentrated in the space just mentioned, would possess the one universal quality of matter, namely, inertia. It is important to remember this, since there is direct experimental evidence of the existence of particles of electricity having this property hitherto only associated with matter itself.

CONDUCTION OF ELECTRICITY THROUGH GASES.—A very brief account of the experimental results in this department of research must suffice. For a full account the treatise of Prof. J. J. Thomson is quite indispensable. The general method of the large number of experiments described in this treatise consists of the determination of the rate at which electricity leaks from an electroscope under various conditions. The rate of leak is very small, so that an electrometer is not suitable.

It will be convenient to state the chief results obtained thus: Leakage is not due to dust, neither is it brought about by the air particles acting as carriers. In the ordinary state a gas is non-conducting, or at least a very bad conductor. By various means it may be rendered conducting, and the remarkable fact is noticed that this conducting power is due to the presence of something which may be removed by a mechanical process, such as filtration through glass wool, or by an electrical process such as

passing the gas through a fine metal tube in an electric field.

A gas when conducting shows no charge in itself; in other words, there are equal quantities of positive and negative "carriers." These carriers, called ions, are not the same as those recognised in electrolysis. When a gas is subjected to a sufficient electro-motive force, it reaches a certain definite state, in which it transmits a definite current. Increase of E.M.F. does not increase the value of this current, which is known as the saturation current. The gas is now said to be ionised.

The results obtained from many experiments show that there are two kinds of ions, positive and negative. The positive ions travel at a much lower speed than the negative ions, the actual velocities under an electric field of 1 volt per cm. being 1·36 and 1·87 cm. per sec. respectively. Diffusion measurements show that ions from different gases are identical, and that the charge carried by each is equal in value to that of the hydrogen atom in electrolysis of solutions. To show how small is the necessary number of the ions present in a gas to explain conduction, it may be mentioned that it is about ten billion times less than the number of ordinary molecules in the same volume of the gas.

Measurement of the Ionic Velocity and Mass.—If a moving charged body be acted upon by a magnetic force the change of direction of its path will depend upon its velocity and the strength of the force. The latter being known, the former may be determined. Further, the moving charged body may be caught and made to yield its charge, which can then be measured. These two processes were carried out at one and the same time by Prof. J. J. Thomson for the cathode rays produced in a specially designed vacuum tube.

The particles composing the cathode rays were found from these experiments to have a velocity of about one-tenth that of light, or about twenty thousand miles per second. The ratio of the charge carried by the ions to their mass was found to be about one to ten millions, or about one thousand times greater than that for hydrogen in electrolysis experiments. Similar results were obtained for various gases, indicating that the ions are the same in each case, and do not consist of the material of the particular gas.

It has been mentioned that gases are rendered conducting by various agencies, such as rays of ultra-violet light, Röntgen rays, the presence of incandescent wires, &c., and the remarkable fact is observed that the carriers of negative electricity in all these cases yield the same values for their velocities and charges. For the carriers of positive electricity, totally different results are found. The ratio of charge to mass is of the same order as for ions in electrolysis, and is a variable quantity within the limits of this order. The velocity of the positive carrier is variable, depending upon the nature of the gas under experiment as well as the E.M.F. to which it is subjected. The similarity of the charge to that on an atom of ordinary matter, and the dependence of the velocity upon the nature of the gas, lead to the conclusion that *positive carriers are of the nature of ordinary matter.* The much higher charges and the independent velocities of the negative carriers, in gases at low pressures, indicate that these do not consist of ordinary matter. In fact, *negative ions are understood to be electricity itself,* and positive ions are considered to be ordinary atoms which have lost negative ions, and thereby become positively charged. We are thus led to a modified One Fluid Theory again, according to which the negative particles or corpuscles or electrons constitute the "electric fluid," and absence or deficiency of the corpuscles produces so-called positive electrification. The positive electrification is always associated with ordinary matter; negative electrification may or may not be so associated; in gases at very low pressures, the corpuscles are free.

Conduction.—Sir Oliver Lodge, in his book "Electrons" (1906), gives an account of the methods by which various processes may be explained upon this theory of the nature of electricity. Conduction in liquids, and in gases at ordinary pressures, consists in the carrying of the corpuscles by the atoms of ordinary matter between the electrodes at the slow rate associated with electrolysis and their delivery to the electrodes on arrival. In rarefied gases the electrons are projected with the high velocities already mentioned. In solid conductors each atom of matter hands on its charge to its neighbour. These three modes of conduction are referred to by Sir Oliver Lodge as the "bird-seed method, the bullet method, and the fire-bucket method."

Origin of Light Waves.—Radiation is explained by motion of the electron, orbital or vibrational, while associated with the atom of matter. All that is known of electric waves shows that they are only produced when a moving charge suffers acceleration. If an electron revolve around an atom it is constantly undergoing acceleration towards the centre of the atom. Waves in the ether are hence produced, and their length depends upon the rate of revolution of the electron. The vibration frequencies of ether waves constituting the limits between which the waves excite the sense of sight are 4×10^{14} and 7×10^{14}. In order to produce a "visible vibration," it would be necessary for the electron to revolve around its associated atom at least 4×10^{14}, or four hundred billion times per second.

If electrons revolve around the atom at various speeds and in every direction, the waves produced will be those with lengths corresponding to these speeds, and they may be separated by the prism of a spectroscope, each line in the spectrum corresponding to one orbital electronic motion. It should, however, be noted that Prof. J. J. Thomson has shown (1903) that increase in the number of these electrons symmetrically revolving around an atom produces a decrease in the amount of the radiation. Collisions which disturb

this symmetry will cause a very largely increased radiation.

THE ZEEMAN EFFECT.—According to this view of the nature of radiation, the approach of a magnet would produce a disturbance in the motion of the electrons, and a consequent change in the length or "colour" of the waves emitted. Such a disturbance was actually observed by Zeeman in 1897, and the broadening or breaking up of lines in spectra from flames subjected to strong magnetic influence is now known as the Zeeman effect. This remarkable result becomes of still greater importance and interest when it is shown that the amount of disturbance indicates a charge on the moving particle of the same value as that previously obtained for negative particles or corpuscles. It appears that if the atom consist only of electrons, then, in the case of hydrogen, there will be about 700, of sodium, about 15,000, and of mercury, about 100,000 electrons to the atom. These large numbers would account for the fact that the waves emitted by any given substance, when radiating, are of many different lengths.

CONVEYANCE OF ENERGY OF CURRENTS.—It has been customary to consider that the expression "an electric current" did not imply the passage of any "substance," and, further, that the energy of the current was conveyed by the ether surrounding the conductor. It becomes difficult, therefore, to return to the idea of a material existence for electricity, which at first seems to contradict this theory. This difficulty is more easily removed when we consider that electrons are of such extremely small dimensions that their fields are also extremely restricted, although actually outside the electrons themselves. The electric current thus may consist of electrons, and its energy be transmitted by the ether outside them.

INERTIA WITHOUT MATTER.—It has been found that radium emits electrified "rays" of a great variety as regards velocities. Kaufmann (1902) obtained the ratio m/e for the most rapidly moving particles by measuring the deflection they were found to suffer when acted upon simultaneously by an electric and a magnetic force. For the highest velocity, which nearly reached that of light, the value m/e was found to be that calculated on the supposition that the inertia of the particles was solely of electric origin. There does not, therefore, appear to be any necessity for assuming the presence of ordinary matter in these rays, known as β rays. These rays are considered to be identical with ordinary cathode rays in vacuum tubes, which are hence supposed to consist simply of particles of electricity. Inertia has thus been proved to exist without the presence of matter, and some have gone so far as to suggest that, having thus one explanation of the fundamental property attaching to all matter, a second explanation is unnecessary, and hence that all matter is electric in its nature, that is, matter is itself electricity.

Those interested in the matters so briefly referred to in this article will be glad to have their attention directed to the third edition of Lodge's "Modern Views of Electricity" (Macmillan), which has been published recently. It is full of interesting details of the most recent work, and, with the addition of reprints of lectures and papers, gives the reader a very clear idea, not only as to what has been done, but also of the questions which are forcing themselves on the attention of physicists to-day. To one already familiar with the earlier editions of the book, it is probable that chapter xvii., on "Most Recent Views concerning the Ether," will first appeal. Lecture iv., "Modern Views of Matter," forms an introduction to the Romanes Lecture, 1903, and to the treatise on "Electrons" recently published. Those to whom the work is new will find the general titles of the sections indicative of the range covered. They are: "Electrostatics," "Conduction," "Magnetism," and "Radiation." Under the last mentioned will be found a full account of the connection now understood to exist between so-called light waves and electric waves, and an indication of the dependence of opacity upon conductivity. To some the word "ether" conveys but little: they will be surprised at the familiarity with which this medium is treated and the very definite properties it is believed to possess.

THE TEACHING OF ENGLISH IN AMERICAN HIGH SCHOOLS.

By W. H. WINCH, M.A.

II.

BEFORE I deal with the methods of teaching, there are a few outstanding characteristics of the syllabus printed in my former article[1] which call for comment.

An Englishman's first feeling, after perusing such a syllabus, would probably be one of surprise at the inclusion of so much work of an apparently elementary nature. It ought not to be necessary to study the "analysis of easy sentences" in the high school, nor should I have thought, from my own observation of the grammatical work of the New York elementary schools, that it *was* necessary. And surely a treatment of the *functions* of phrases and clauses should hardly be delayed until the second half of the second high school year; for how could they usefully have been dealt with at all unless functionally?

There is, further, a vagueness in some of the directions which may obviously lead to highly diverse interpretations. Such, for example, are "the applications of the principles of grammar to English composition," and "the principles of unity, coherence, and emphasis in the composition." The latter requirement appears so frequently that one is tempted to believe that it is honoured in the breach rather than in the observance. But, at the same time, the English reader could hardly fail to note that the range of prescribed reading is very wide: to the American, English books are indeed his "classics," as the

[1] THE SCHOOL WORLD, May, 1908, p. 168.

Chicago plan of studies actually styles them. An Englishman would also realise that there is a systematic endeavour to produce a clear, correct, and pointed English style: the "description of objects from a moving point of view, particularly of the same object, is well worth imitating. In the fourth year "argumentation" includes an appeal, not only to the reason, but to the *interests* of an audience: the pupils are thus taught how to succeed in a democratic country. In furtherance of the same end they are required to write upon "questions of the day."

How are the lessons given, and with what results? In the first place, not many lessons *are* given in our sense of the term: the word "lesson" is not even used as we use it; the American speaks of so many "recitations" per week, not so many "lessons." And the "recitations"—what are they? They are not, as with us, repetitions of something learnt by heart, but are recitals in answers to questions, sometimes written, but mostly oral, on work which has been prepared out of school hours or during the time allotted to private study. This method of "recitation" is common to all kinds of American schools and not merely to secondary schools; and though the educational reformer of America is agitating for the giving of lessons in place of some of the hearing and correction of prepared work, and is doubtless right in so doing, there is much, very much, to be said for any system which throws the onus of work and progress, not wholly on the teacher, but largely on the pupil. Above all, it is rare to hear any lecturing on English, that most futile and delusive of all forms of teaching.

The students are practised in giving long oral answers as the teacher questions on the work done; and it is not uncommon to see a teacher with a little pack of cards in her hand, one for each student, giving a mark for each answer as she passes in irregular order from pupil to pupil. These marks, be it noted, count, in many cities, towards graduation.

Another characteristic and universal feature is the freedom with which the pupil is encouraged to express opinions and introduce individuality into her composition: this is not necessarily licence; but discipline of a very highly developed kind is needed in order that it may not become so. Doubtless, however, some brief account of lessons which I actually heard and of work which I actually saw will help English teachers to realise American high-school work in a clearer way than pages of general description.

I select one lesson from Worcester, one from New York, one from Chicago, and one from Boston. They are chosen as fairly illustrative, and are not by any means necessarily the best I heard.

Worcester, Massachusetts, High School (Mixed).

First-year pupils, about forty in number, of an average age of 15½ years.

These pupils all came from the grammar grades of elementary schools in the previous September; it was now May. The teacher spoke at once of the defective condition of their grammatical knowledge. "Worcester," she said, "like larger places, has had its 'no grammar' period. It is now taking up again the work it has dropped, but the recovery is necessarily slow."

I was kindly allowed to ask some questions on analysis, and one or two on some parts of speech in the work the class was then studying: the answering was very unsatisfactory. But oral answering is never conclusive, so an exercise was dictated:

1. Analyse, in outline,

> "*And now hath every city*
> *Sent up her tale of men;*
> *The foot are fourscore thousand,*
> *The horse are thousands ten.*"

2. Write the word *that* in as many different parts of speech as you can. Use a fresh sentence each time, and say what part of speech the word is in each case.

The written work confirmed the opinion previously formed. One of the best papers, however, I am able to give exactly as written:

1. Complex declarative sentence, subject of main clause = city, predicate of main clause = hath sent; the foot of fourscore thousand, the horse of thousands ten, is an adjective clause describing the tail of men, in principal clause.

adv. adj. noun conj. adj.
2. I knew that that that that that boy had was fine.

The boy found that he had not followed instructions as to putting each "that" in a separate sentence, but I thought he had sufficiently shown that he understood how to answer, though his answer was not correct.

New York, New York State, High School for Boys.

Second-year pupils, twenty-six present, of an average age of 16½ years.

Four periods a week were given to English; three were used for "recitation," and one was a study period, in which the teacher dealt with the work of each pupil individually.

George Eliot's "Silas Marner" was down for critical reading; the edition used had no notes. On the wall-slate was an uncompleted classification of fiction which is self-explanatory:

Fiction { Romance, emphasises the story.
Novel, " character.

Novel { Psychological { *a.* Development—Silas Marner.
b. Problem —Godfrey Cass.

This recitation more nearly resembled a lecture than was usual; there were questions, but the teacher was responsible for most of the propositions advanced. He was fluent and enthusiastic, and the pupils very attentive; but I hardly thought that "critical reading" was so well furthered by this method as by one which demanded more independent co-operation on the part of the pupils.

"Retributive justice," said the teacher, "is the

solution of the problem as George Eliot puts it for Godfrey Cass."

"It is not George Eliot's intention to solve it; you, the reader, must solve it. What did George Eliot mean? There is a problem put, but there is no essay on the subject."

Teacher. Where was the humour of Mr. Macey's character?

First Pupil. He sang in the choir.

Second Pupil. He was always saying the older generation was the best.

Third Pupil. He always told the same old story.

"The telling of that story," said the teacher, "was a perfect gem."

"Are there any other strikingly humorous characteristics?"

But to *analyse* humour of the George Eliot variety is too much for boys of this age; it is enough if they can even dimly *feel* humour of the more subtle sort.

CHICAGO, ILLINOIS, HIGH SCHOOL (Mixed).

Fourth-year pupils, twenty-three present, mostly 18 and 19 years of age.

This was a recitation on prepared work in English literature.

Teacher. Was there anything beside poetic drama which gained perfection at that period?

First Pupil. The novel.

Second Pupil. No.

Third Pupil. The essay.

The teacher thought that could be said of Bacon only.

Teacher. What does the author (the writer of the text-book) mean by the Romantic age?

Pupil. The age just before Victoria.

Teacher. Who were the chief poets?

Pupil. (1) Pope and (2) Wordsworth.

Teacher. Comment on (2).

Pupil. Not Wordsworth, Shakespeare.

Teacher. Comment on (1).

Pupil. Pope is not romantic.

The boy who had given Pope as romantic was not satisfied. I asked him if he had read Pope. He said he had; he had read the "Odyssey"; he thought it *was* romantic. The error was easily explained, but I valued the boy's answer more than that of the girl who said "Pope was not romantic," because he was thus described in the text-book.

The teacher told the boy that the "Odyssey" was a translation, and that Pope's view was

> True Art is Nature to advantage dressed,
> What oft was thought, but ne'er so well expressed.

Then a few questions dealt with the characteristics, first of the Elizabethan and secondly of the Victorian age; the teacher then went back to the Romantic school.

Teacher. Give the poets other than Wordsworth.

Pupil. Keats, Shelley, Byron.

Teacher. What spirit generally characterised these writers?

Pupil. The revolutionary spirit.

Teacher. What form is most characteristic of this age?

Some answered "Prose" and some said "Poetry."

Teacher. What kind of prose?

Pupil. The novel.

Teacher. How do you account for the novel?

Pupil. The common people now wanted something to read.

I could not refrain from suggesting that the common people did not read the novels of that period then, though some of them did now; and that, both in America and England, the taste of the mass of readers was below the standard thus ascribed to them.

Text-book literature of this sort, however accurately known, always arouses in me a feeling of discomfort—a vague apprehension of wasted effort; though I quite see that the student needs some kind of general scheme within which he may locate the writers he actually reads.

BOSTON, MASSACHUSETTS, ENGLISH HIGH SCHOOL.

Fourth-year pupils, twenty-one present of an average age of 18½ years.

These boys had been required to write a general appreciation or criticism of Wordsworth's "Ruth," and through the courtesy of the teacher the papers were handed to me, and two of them are reproduced below. Much may be learnt from these papers, both as to the aim and result of the English teaching. They are printed without correction, exactly as written by the students.

RUTH.

To speak frankly, and backed up by that friend of the dogmatist, ***de gustibus non disputandum est***, I must say that "Ruth" is the most unpoetic poem that I have ever read. There is no spark of that divine inspiration which characterises the true poet. Throughout most of his poems, whether from his intimacy with Nature or from some other cause, Wordsworth is exceedingly prosaic, and sometimes may be convicted of prolixity.

The story of the poem is itself true to nature; but as far as poetry is concerned, better a lie in a pretty garb than a truth in its marble nakedness.

The moral of the poem is self-evident, and is but too much needed in these days of free thought and conjugal liberty. Many a girl has been ruined by lending a willing ear to a shilly-shally, love-sick youth who was driving wildly on through the realms of fancy.

It is only in those parts of the poem where he dealt with Nature directly that Wordsworth arises to his task.

On the whole, in the plainest language at my command, I like the idea, but I do not like the poem.

AN APPRECIATION OF WORDSWORTH'S "RUTH."

This beautiful lyrical poem, written in trochaic tetrameter with a rhyme scheme of AA, BB, CC, D, might, from the nature of the theme, be properly called a ballad. And what a touching tale it brings forth!

How romantically Wordsworth brings a soldier to meet a beautiful maiden whose home is no home. The maiden, Ruth, marries the soldier, and she is happy, but for a very short while. Her lover, and husband, forsakes her to go back to his old wild life.

Ruth is now alone, desolate, grief-stricken. We must sympathise with her. Her momentary bliss has been changed to eternal grief. Her sun has risen only to be blotted out by ominous clouds.

"It is not the clothes or face, dear Ruth, that make the man."

Finally, what are the results? Let us consider first some of the estimates of Americans themselves. The Committee of the Middle States and Maryland, which deals with College Entrance examinations, asserts that the purpose of English studies is to secure sympathetic and comprehensive appreciation of the writings of the great thinkers, and the power to use the English language in a clear, logical, convincing, and agreeable manner, and this is a fair presentation of the prevalent American ideal. But in recent reports of entrance examinations at Harvard University, only 4 per cent. of the candidates were commended for English and 28 per cent. were pronounced "illiterate"; their work was declared to be "seriously deficient in punctuation, sentence structure, spelling, and the use of paragraphs." There is a little note in small print in the Harvard Catalogue which has not as yet received sufficient attention. It runs, "No candidate will be accepted in English whose work is seriously defective in point of spelling, punctuation, grammar, or division into paragraphs."

There seems some tendency among American teachers of English to ascribe these defects to the length of the list of prescribed books, the need for their analysis, and the emphasis laid on the study of the notes which are said to be "like little dogs barking at the text."

The business man, too, adds his quota of criticism. To his mind the English work of the high schools is unpractical; his clerks cannot spell and cannot write letters. Perhaps they have not all of them been to the high school; but, in any case, the business man, it is said, in *his* school days, learnt to read well, to spell well, and to know his grammar. As an able writer, apparently a teacher, writes in an American review, "Whatever adornment the old education lacked, it had a real foundation."

Then there is the criticism from precisely the opposite point of view. The well-known novelist, Dr. W. D. Howells, expresses the usual criticism of the first-rate expert on the teaching of his own subject, "The study of literature in our schools cools the pleasure which might otherwise be taken in it out of school. It ought never to be forgotten that literature ought to be enjoyed in perfect freedom."

It would be ungracious, if not impertinent, for an Englishman to decide between such conflicting views. But some aspects of the question seemed to me clear and unconfused. There is, in America, a widespread interest in English literature, largely, it is true, a mid-Victorian *cultus*, as Mr. H. G. Wells has lately complained. But the interest is there, and it is one which is relatively lacking in our own country. There is a much freer use of quotation from standard authors than among ourselves; and, at its best, the composition, spelling, and rhetorical structure of the English of the high-school graduate appeared to me very good indeed. That, however, the orthographical accuracy and grammatical structure are somewhat less carefully attended to in the high school than they are in the elementary school, I, for one, have little doubt. The analysis of English and its synthetic reconstruction require for their teaching a long and careful training on the part of the teacher; and in America, as in England, this training has yet to be experienced, in any large measure, by secondary-school teachers. But accuracy, precision, and balance, whether in elementary school, high school, or university, unless they are to result in mere *précis* writing, should be based upon a reining-in of fluency, and upon self-criticism which can choose the best from an abundance of relevant ideas. I am by no means sure that some reversal of the present sequence of work might not be an advantage, both in English and American composition. In the elementary school, we might try to obtain more fluency and fertility of imagination; and, in the high school, more accuracy of expression and keener grammatical appreciation.

EXPERIMENT IN EDUCATION.

THE Department of Education in the University of Manchester is setting an admirable example. If education is to rank as a subject of university study, the unquestioning acceptance of the traditions and preconceptions which have hitherto controlled its practice must be given up. Those preconceptions must undergo a rigorous cross-examination and practical precepts must submit to scientific tests. Thanks to a generous donor, Mrs. Fielden, a school has been attached to the Education Department at Manchester, in which educational problems may be investigated in the spirit and method of science. But the problems themselves are so subtle and complex that prolonged research is a first essential. For this reason it is not surprising to find the first number of the *Demonstration Schools Record* largely occupied with apologetic and explanatory matter.

Prof. Findlay and his colleagues are not satisfied that the current idea of the organisation of the school curriculum is sound. It is the product of unceasing effort on the part of teachers to analyse the various subjects into their elements in improved Pestalozzi fashion. These elements are found in direct sensory observation, and they are administered in so-called object-lessons, that they may be subsequently built up into the departments of knowledge ordinarily represented in the schools. To that end skilful teachers have spent enormous pains in devising steps and exercises which defy the criticism of the most captious logician. We congratulate ourselves upon the results of their labours, and think how Bacon

and Comenius and Pestalozzi would have approved. For here direct observation is the foundation of everything. The advance is from the concrete to the abstract, from the particular to the general, as orthodox pedagogy prescribes.

But deeper insight into the nature of mind has led to the view that orthodox procedure is not in accord with the broad principle of vital development. It completely ignores the modern doctrine of evolution. Mind in the race has developed in the effort towards completer adjustment to environment; mind in the child serves the same purpose and develops under the same impulse. The problem of education is, therefore, first of all one of environment, that is to say, of arranging experiences and problems of adjustment which shall appeal to the child as *his* concern.

As a working basis, Prof. Findlay accepts the doctrine of recapitulation and its pedagogic corollary known as the "culture epoch" theory, at the same time introducing certain modifications with the object of weaving into his scheme the influences which present-day circumstances exert. This is not the place to discuss the difficulties involved in the theory, though one is sometimes reminded of the eighteenth-century conceptions of the state of nature and of the social contract, the only drawback to which was the complete absence of any historical justification.

The work at Manchester follows broadly the lines of Prof. Dewey in his Chicago experiment. Such changes as are made are surely in the right direction—for example, closer attention to reading and writing. The detailed schemes in history and science are interesting and suggestive. In the science scheme a rather scrappy series of hints as to correlation stimulates curiosity. Why should literature be correlated with the science of the first and fourth year and not in the second and third? Do children of ten really appreciate the poetic view of nature? And is the life of Newton necessarily literature? Doubtless, the correlations are intentionally scrappy, but so many intellectual atrocities have sprung from efforts to correlate that one would have been glad to know something of the point of view that these suggestions represent.

It is not possible to do justice to the various essays in the volume, all of which contain much food for thought. We look forward to future issues of the *Record* in the confident hope that they may contain definite contributions to the solution of the more precise teaching problems which are under investigation in the school. Perhaps Manchester may take the lead in the application of some of the methods of the experimental psychologist to the many unsolved questions which confront the teacher. Prof. Findlay's analysis of the mental phenomena involved in learning a foreign language has, for example, no reference to the fact that modes of ideation differ. The neglect of these differences may be a partial explanation of the class which was difficult to manage and made slow progress, referred to on page 66 of the *Record*.

NATURE-STUDY AND THE SCHOOL JOURNEY.

THE sixth of the excellent series of memoranda that are being issued at short intervals by the Scotch Education Department treats of nature-study and the teaching of science.[1] It is divided into two sections, of which the second, devoted to the teaching of science in the intermediate and secondary-school grades, is much the shorter and less important. It lays down with sufficient clearness the principles of the "laboratory method" of instruction in chemistry and physics, as these have been for some years exhibited in the practice of good schools, but it makes no advance upon the present conception of these principles. It is doubtful, indeed, whether in the matter of syllabuses the memorandum represents the best current standards. The earlier and longer section on nature-study (see p. 266) is of much greater value, and will be found suggestive and helpful south as well as north of the border, in secondary as well as in primary schools.

The character of nature-study as dealing directly with natural objects and occurrences in the fulness of their actual setting, and so forming a necessary introduction to the special sciences with their less concrete points of view, is properly insisted upon and clearly defined. The scope of the topics that should fall within the range of nature-study—the sympathetic study of the life-histories of plants and animals, and of the seasonal procession of weather phenomena—is not narrowed so as to hamper the liberty of the teacher, nor left so vague in its outlines that the subject becomes amorphous. One of the most useful results of this publication will be, in fact, that it gives official sanction to the view that nature-study, rightly and soberly conceived, is a discipline of the highest value fitted to perform a definite and indispensable function in the school curriculum.

While from the point of view of the spectator of educational progress this is the chief significance of the memorandum, the practical teacher will turn with more interest to the full and helpful suggestions in practical matters, such as the management of school gardens, collections, nature-study calendars, and the care of animals. Probably, however, his warmest welcome will be reserved for Prof. J. A. Thomson's syllabus of seasonal nature-study, printed as an appendix to the memorandum. There can be little doubt that the wide circulation of this syllabus with its most excellent illustrations of method will be of the utmost value in defining the form of a type of instruction in which enthusiasm and sobriety are at the present stage of its development equally necessary.

Mention of the paragraphs dealing with nature-study excursions has been postponed, so that it might be supplemented by reference to the interesting programme of the "Thirteenth Educational Excursion," which we have received from

[1] "Memorandum on Nature-study and the Teaching of Science in Scottish Schools." (Wyman and Sons.) 3*d*.

the Bellenden Road London County Council school, Peckham. Readers of Mr. Montmorency's recent report on the school journey will remember that the series of Easter week excursions was started at Bellenden Road by Mr. G. G. Lewis, who during the last vacation took a large party of boys from his school in Kentish Town to Shanklin (see p. 248). It is evident that Messrs. H. E. Turner and H. Longhurst, who have succeeded him as organisers of the expeditions from his old school, are developing with vigour an excellent tradition. The programme is intensely practical, from the page which prescribes the traveller's kit to the page which, on his return, is to show a complete account of his expenditure. The pages between these prepare him to make the best use of his eyes on the railway journey, in Gloucester Cathedral (which was visited on the way), and in the organised rambles round Brecon—the headquarters of the party. The articles are supplemented by sketches of architectural details, contour maps and diagrams, all eminently well adapted for their purpose, and excellently lithographed by Mr. Longhurst himself. The little work reflects the greatest credit upon all concerned, and should prove an inspiration to others, who, though not less favourably situated than these enterprising teachers in elementary schools, have not yet made practical acquaintance with the educational possibilities of the school journey.

HISTORY OF ENGLISH LITERATURE.[1]

ALL readers know what to expect from this great book. The first volume dealt with beginnings: now we are in the heart of things. Piers Plowman, Wyclif, Gower, Chaucer, the Paston letters, Caxton, Malory, song collections, and six essays on Scottish literature show the range of the contributions; though the titles of the chapters are not mere names as we have given them. Learned, fair and, for the learned, sufficient, is this volume; but to appreciate it the reader must appreciate his literature first.

The Chaucer chapter is admirable: the common sense which sets critics right about the ethics of the Clerkes Tale ("there never will be many Griseldas"), the wholesome scepticism about the "biographies" of the poet, the whole-hearted admiration of Chaucer could come surely from no pen but that of Prof. Saintsbury. Wyclif, by contrast, is disappointing: there is no sympathy with him or with the intensely modern Langland; and, by the way, if we are to listen to Abbé Gasquet's views concerning the Wyclif Bible we ought to have more proof given to us; you cannot wave aside a five-hundred-year-old tradition with a statement by Sir Thomas More, an avowed enemy.

A chapter on education (which seems to have lost its way) owes more to Rashdall than to Anstey; and the result is a thinness which is often seen when the new historian, who may not be fascinated, is condemned to study a fascinating subject; as for the schoolboy, he is patiently waiting until someone—who loves him—comes along and tells his history. Of Langland there is little criticism, but much analysis: his title "poet" is neither explained nor defended. Dunbar is the first of the Scots writers to whom the reader will turn (surely Lowell was more just to Gower than to Dunbar when he frankly condemned them both). The "Aeneid" of Douglas comes in for half-hearted praise: we wish it were accessible in a cheap form.

The chapter on English song collections is all too short—we were in the month of May when we read it. As the writer tells us, these songs are unknown, unedited (except by Germans!). The whole volume, which is a monument of fine work, is toned, it seems, editorially up to a note; the note is not high except when a writer escapes the net of the fowler and bursts into critical song.

The bibliographies so admirably done might, of course, here and there be added to. In no spirit of discontent it is suggested that under Mandeville might come the reproduction of the Mappa Mundi; Lounsbury's "Studies in Chaucer" is given as a biography, which it is not; is Russell Lowell's "My Study Windows" beneath notice? Baildon's edition of Dunbar is not mentioned; Budinsky's list of English students at Paris in the Middle Ages is omitted; and if Guest's "English Rhythms" is to be referred to, why not J. E. B. Mayor's chapters on Metre? There is (for a learned book) a wonderful misprint in the title of Mr. Anstey's famous volumes. Mr. Anstey never edited "Monumenta Academica." For the unlearned an explanation of the abbreviations in the bibliographies would be a boon.

[1] "Cambridge History of English Literature." Vol. ii. 538 pp. (Cambridge University Press.) 9s. net.

A BRILLIANT SATIRE.[1]

THIS book deserves more than a brief notice. Joseph Hall, the satirist (1574–1656), wrote this brilliant satire when he was about five and twenty years of age, before he became absorbed in the mazes of divinity. It is a work of the same kind as "Utopia" and the "New Atlantis," having relations also to "Gulliver's Travels"; its tone is more like the last than it is like "Utopia," but it is less bitter and more humorous. It is, indeed, a magnificent piece of fooling, with no small spice of wisdom. Not a page but is racy with wit and fun. This book is very much shortened from the original, but the shortening is done with skill. The reader is introduced to the lands of Crapulia, Yvronia, Viraginia, Moronia, and Lavernia, and the extravagances of the matter are all carried off with unmoved gravity. The election of magistrates in Crapulia *ad mensuram ventris* is a notable touch; and the laws of the land are enunciated with the most solemn formality. Mr. Asquith and Miss

[1] "Joseph Hall: Mundus Alter et Idem." Edited for school use by H. J. Anderson. xvi+184 pp.; with the original maps. (Bell.) 2s.

Pankhurst might perhaps profit by studying the constitution of Viraginia. Yvronia is compared with Germania, which is another mark that the satirist is up to date.

The great drawback to the book is its vocabulary, which is very wide, and draws humorously on most of the languages of Europe. To appreciate the book, the reader ought to know Latin well. Nevertheless, one who knows Latin less than well might enjoy it in a great degree; the sixth-form boy could probably do so, and the fifth form might prefer it to Caesar. The notes are not too many, take them as a whole; a good many notes are necessary, but a number of them might be omitted with advantage; we mean those that translate ordinary phrases: *e.g.*, "*quid metuerim mihi*, what I feared for myself" (p. 96), "*eo quod*, simply because" (p. 100), "*oculis introrsum demissis*, sunken" (p. 101), and many others. The index of proper names is quite necessary, but the vocabulary at the end might be confined to new words or words strangely used.

This book is welcome, not only for itself, but as a sign that a more reasonable spirit is coming over schoolmasters. It will soon be recognised, we hope, that beginners want plenty of texts both easy and interesting; and that it does not matter at all if these are not classical. Let us have the best of late Latin, or mediæval Latin, or any Latin that can furnish books worth reading; and when Latin has been learnt by these, the learner will be ready to understand and to enjoy his Caesar, Virgil, and Cicero.

TRANSLATION.[1]

By W. H. D. ROUSE, Litt.D.

THERE are two kinds of translation: one is an art, an end in itself; the other is a test, or a method of explanation, a means to another end. These are very commonly confused.

Of the first kind are the translations of a great literary work into a foreign language: Homer, Virgil, or Dante in English, Shakespeare in German, Russian, or Chinese. It is obvious that these must stand or fall by the appreciation of those who do not know the originals. If the Chinese version of Shakespeare offend against Chinese canons of good taste, or if it be unintelligible to the educated Chinese, it is a failure. So with Homer and Virgil and Dante in English. Success in this, the art of translation, can at best only be partial, because no word in any language covers exactly the same ground as a word in another language, and the associations of words are so different. With simple thoughts there is often very little difficulty; but the chief difficulty lies in association, and especially in literary association. Take for example two words, both which might be used in English books by an English speaker, *merci* and *gramercy*. If we were told no more of a book than that some English speakers used either of these, we might fairly infer the one to be a certain type of society novel, the other antique or mock-antique, Sir Thomas Malory or William Morris. Take again the word cynosure: what did that mean to Thucydides? and what would it mean to us but for one passage of Milton? I need not labour the point: every scholar knows the importance of association.

But how did he learn it? Look at the English style of young men fresh from the university: have they learnt the importance of association? Have schoolboys learnt it? What journalists or members of Parliament have learnt it? All these, as classes, seem to be lacking in this respect; and what knowledge they have they always overdo. If one hits on a neat phrase the others all copy it, until it has a new set of associations, and becomes for the man of letters detestable; still they go on, for years. One of these phrases is, "to do yeoman service," which came into existence for the people just as the yeoman went out, killed by Cobden, and it is used by thousands of persons who have never seen a yeoman. If any of us have learnt the associations of words, we have learnt by reading our national literature and by talking with persons who know. All this takes time, and it is not to be had in any other way. We cannot learn it from Roget's "Thesaurus," or else all the Bengalee baboos would have it. The great man of letters learns it quicker than we do, but he learns it in the same way: Shakespeare we know was a great reader, and he was also a great talker, and lived amidst a people who talked well, had, moreover, the advantage of seeing scores of excellent plays performed. Our method of learning, if we are to learn, must be similar, although it will not be so quick.

But if the mind is to be alive to all the delicacies of association, it must not be preoccupied. No one, I venture to say, can learn to appreciate these whilst he is learning something else: he cannot, for instance, learn the associations of English words while he is grappling with the grammar and vocabulary of a strange language; nor can he learn the associations of Latin words while he is still ignorant of the elementary words and constructions of Latin. One thing at a time: English at one time, Latin at one time, not both together. And if anyone wants to understand the literary associations of Latin words and phrases, he must do it by reading Latin, not by doing something else.

It follows that we must separate the reading of English authors and the writing of English from the reading of Latin authors and the writing of Latin, if we are to learn to understand both literatures and to compose in both languages. When we have learnt how to understand and to compose in English, and how to understand and to compose in Latin, we shall be then ready to transfer a literary piece from one to the other. The more subdivision there is, the more effective is the teaching in each stage. So if we wish to enlarge the knowledge of words we must have texts that contain only familiar syntax, and if we wish to enlarge the knowledge of syntax we must have texts that contain only familiar words. When both words and syntax are familiar, we may use both freely together.

But there is another thing called by the same name of translation, which is not an art nor an end in itself, but a test or a method of explanation; that is a means to an end. In the early stages of learning a foreign language, very often the shortest way to test knowledge of a new word or construction is to ask the learner to express in English what he takes it to mean. Sometimes, also, it is the best way to teach the meaning of a new word. This is often the most convenient way, but it is not the only way. We had once to learn, for example, the meaning of words and constructions in our own language; we learnt them by hearing others use them in

[1] Reprinted, with the editor's permission, from the *Classical Review*, June, 1908.

many connections, and by observing their byplay of look or gesture. If this were not enough, if the speaker could not point to a thing that he named, or act a verb, or suggest association by a tone, he could describe it, or show a picture: and if none of these things were enough, the act or thing must have remained unexplained, to be learnt by experience if at all. In learning a foreign language, we have the advantage of a superior knowledge of our own, and here a word of translation may often save the description or the action. But observe, the help we thus gain is only gained if we already understand the English word and its associations. Suppose both English and foreign word to be equally unknown, or the English known but imperfectly, translation here is no help. It will be necessary to explain the English before the foreign word can be understood; and however useful this may be for English, it is so much time wasted for the foreign language. There is the further disadvantage that the continuity of thought is broken whilst we pass from one language to the other and back again.

Now the schoolboy is imperfect both in English and in foreign languages: it is obvious economy that he should learn and practise each of these subjects apart. His power of transferring thoughts from one language to another is limited by his knowledge of either language apart. He is not fit to transfer from one language to another anything that he has not learnt already to understand in both: that is, the standard of his translation must be within the stage of his knowledge of the idioms of both languages. In other words, he cannot learn the idiom of either language by translation; he can only practise what he has in some other way learnt.

But in what way?

The idiom of a language is the usage of its best authors; and this can only be learnt by reading those authors, or hearing them read, in the original. I hope enough has been said to show that familiarity with (say) Latin idiom cannot be gained by translating it into English, only by reading or hearing it in Latin. The same may be said of vocabulary: the Latin word and its associations are learnt by reading as many as possible of the passages where it occurs, not by looking at it with the eye and saying or thinking of an English word. It follows that more Latin may be learnt from reading a book of Livy than from translating it, and more Latin from reading six books of Livy once than from reading one book of Livy six times. After the learner has read these six books, making occasional compositions out of his own head on similar themes, he is then ready to translate a piece of Livy into English, provided that he has already shown himself capable of writing English on political and military themes. He is also ready to translate a piece of Napier or Gibbon into Latin; but this will come later than the power to translate Livy into English in proportion as he knows English better than he knows Latin. I do not mean to imply that he translates nothing until he has read six books, for he must practise occasionally, but that after having read six books he will be ready to do the translation either way, to a certain degree, without violating the idiom of either language.

The question now recurs, what part is to be played by translation in the course of teaching? *Ex hypothesi*, the pupil will be reading his six books of Livy in Latin, and the only way to make sure of this is actually to hear the whole six books read aloud in class. How are we to make sure that he has prepared his work, or that he understands what he reads? We will assume, for the present, that he was supposed to prepare at least part of the lesson with his dictionary at hand, and that we desire to test whether he has done so. The answer is, that the reading itself is generally a sufficient test. Neither Latin nor any other language can be properly read aloud, with due emphasis and proper phrasing, unless it is understood; and the master will at once stop his reader if he does not read aright, and will ask him what he means, or will correct the reading himself. Moreover, the master knows, or ought to know, what words and phrases are new or likely to be misunderstood; and these he will ask about or explain, whether the reader read properly or not. If we are right in desiring to concentrate attention on one thing at a time, and in avoiding breaks of continuity, as I have argued above, these questions and these explanations will all be in Latin. Every now and then will come something which the master cannot make sure of, and here he will ask for or give an English rendering of a word or a difficult sentence, or, better still, an English paraphrase in explanation; but the fewer these breaks the better for the purpose of learning Latin, and in any case the English given in explanation must be already familiar. By this means every moment of the lesson is given to learning or practising Latin, and the pace and thoroughness of the work is enormously increased. Reasonable care and preparation on the master's part will enable him to bring in day by day one or other of the difficult constructions and idioms of the language, until all become quite familiar. By the same means the common accidence becomes quite familiar, with a minimum of the learning of paradigms by heart.

What I have just described is suitable for a sixth form; and it is, indeed, remarkable how easy it is to dispense with English altogether in the reading lesson. I do not speak of technical grammar, notes, and questions, which are best given in English; but they may be kept by themselves; I speak of the reading, that which is commonly treated as a basis for English construing. With the lower forms a more rigid test is needed. Here my own experience recommends that new work be treated in form as above, paraphrased and explained by means of Latin or Greek words already familiar, as a preparation, and that the home work consist partly in writing out the translation of the piece so prepared. Here the ground covered will be less, the explanations longer and oftener; but still no time is lost, everything, or almost everything, being in Latin or Greek. With care, each preparation lesson may be made a lesson both in accidence and syntax, the explanations being partly dictated, or taken down summarily, for use at home. In the earliest stages, again, the bed-rock vocabulary of simple words, and a good deal of accidence as well, may be taught along with action. But in the early stages more English explanations will be necessary of new words, until the pupils have material to go on with. Yet it is possible to do a great deal even then without English if the master makes up his mind to do without it as far as possible. This subject, however, is too large to deal with here; and I must refer to Mr. W. H. S. Jones's "First Latin Book" (Macmillan), where a system is worked out for the earlier lessons.

The master must not be afraid of talking over the heads of his boys; that is the way we learn our own tongue, and, if used judiciously, it is most effective. There is no need, for example, to wait for the third declension before one can cry *O di immortales!* and there is no need to explain what it means when said, if said with appropriate look and tone. Many idioms not in the schedule may be made familiar long before the end of the first term, and when they are met with in books a word or two will

throw light on the accumulated associations and fix them for ever. For example, the dependent question, *nescio quid dicas*, may be used by the master long before it is used by the pupils; and as soon as their curiosity is excited to ask the reason of the mood, all may be explained when the boys' minds are ready to receive it, eager to learn, and not passively resisting. So with the wish, *utinam tu eloquaris*, or *o si sapiens esses*—but enough. Thought, care, and system are wanted, but with these much can be done.

One point I must lay stress on, because it might not seem obvious: the less test-construing there is the better is the English style of the translations that are done. The average translation in schools is bad, there is no doubt of that: it is full of mistakes in idiom, dog-English, in fact; it is mechanical, a machine-made product; worst of all, it abounds in nonsense. It is worse than the average Latin composition, because the makers of it ought to know that it is nonsense, and do see that as soon as the fact is pointed out. Read out A's rendering of a passage, and all the letters of the alphabet, including A himself, will be highly amused; yet others may be just as bad. Now there is absolutely no excuse for nonsense in English. For mistaking the sense of a word there may be excuse, but there is none for nonsense. But in the renderings of all stages, from top to bottom, when the work has been done in the way suggested above, there is practically no nonsense. I have before me all the written work of four forms for a term, and there is in it practically no nonsense and very little unidiomatic English. Meanings are mistaken not infrequently, but the word given is then generally one that might have stood in its place without offence. There is no mechanical likeness at all: each version is the author's, often racy and characteristic, always his own. There is one exception: he is a boy who has elsewhere been learning Greek for three years on the usual plan, and he is placed with a form that has been learning Greek for four terms on the plan described. His papers are nearly all nonsense; yet he is not inferior to the others in ability. This is not a unique experience; we have found this strong aptitude for nonsense in nearly every case where boys have joined us after learning French, Latin, or Greek elsewhere. Let me take a short passage (Lucian, "Dial. Mort." 10) as an example:

ἀκούσατε ὡς ἔχει ἡμῖν τὰ πράγματα. μικρὸν μὲν ἡμῖν, ὡς ὁρᾶτε, τὸ σκαφίδιον καὶ ὑπόσαθρόν ἐστι καὶ διαρρεῖ τὰ πολλά, καὶ ἦν τραπῇ ἐπὶ θάτερα, οἰχήσεται περιτραπέν, ὑμεῖς δ' ἅμα τοσοῦτοι ἥκετε πολλὰ ἐπιφερόμενοι ἕκαστος.

The spaced words and phrases were new and had to be explained; the rest was also explained by paraphrase, even when not necessary, to make sure. The only English used was to explain the intransitive use of the verb in *ὡς ἔχει*, and the rest was as follows:

σκαφίδιον· σκάφος μικρόν, πλοῖον μικρόν, οὐ μέγα.
ὑπόσαθρον· ὀλίγον σαθρόν· ὑπόσαθρόν ἐστιν σκάφος ὅταν εἰσέλθῃ τὸ ὕδωρ· τοὐναντίον δ' ὑγιές.
διαρρεῖ· τοῦτ' ἐστιν, εἰσρεῖ τὸ ὕδωρ· ὅταν εἰσρέῃ τὸ ὕδωρ, διαρρεῖ τὸ σκάφος τὰ πάντα, παντελῶς.
οἰχήσεται. φροῦδον γενήσεται, διολεῖται.
ἐπὶ θάτερα, ἢ τὰ ἕτερα· ἢ ἐπὶ τὸν ἕτερον τοῖχον ἢ ἐπὶ τὸν ἕτερον.

The explanations were driven home by questions, so framed as to exact the use of the words by the pupils. It will be observed that the vocabulary is thus enlarged (the spaced words were new), the accidence is practised (*μέγα, εἰσρέῃ, εἰσέλθῃ, γενήσεται, διολεῖται*), and the syntax also (*ὅταν εἰσρέῃ, ὅταν εἰσέλθῃ*): these are not new, but old work practised. Now take one or two renderings, as they come.

A. "Listen what we have to do. We have only a very little boat, as you see, and a somewhat rotten one, also it leaks very much, and if it should turn either way it would turn and go down; but you who came all brought many things."

B. "But listen what the trouble is. As you know, our boat is small and rather rotten, and leaks a great deal, and it will upset before it gets over, especially as you all have so much baggage."

C. "Hear how things are going on with us. Our boat is small as you see, it is a bit rotten and leaking badly, and if it goes to the other side it will turn turtle, and here have all you people come together with a lot of luggage."

Z. "Listen to what he has done to us. As you see he is small, with little sense and half rotten, and escapes the rest and had turned to the others and he will be going all round. Then you come each bringing many things."

It should be remembered that the passage was not translated into English; the above represents the independent work of each boy. Mistakes are made in *ὡς ἔχει. ἐπὶ θάτερα*, and *περιτραπέν*; and as these are repeated by several more, it is clear that they were not properly explained. To remedy this would be quite easy another time, and these particular mistakes may be expected to disappear. A is not very good in style, but B and C are, and none of them writes nonsense. All are typical examples taken at random from the exercises. But the unhappy Z gives a complete hash of nonsense for all except the last few words; he is the boy referred to above who has been learning Greek for three years by means of paradigms and construing.[1]

I will take now one or two examples to suggest the possibilities of the method. First, I copy a boy's notes from his note-book exactly, mistakes and all: the text is Theocr. xv. 1–4 and 27–32 atticised (No. 2 in my little "Greek Reader"):

Γοργῶ Γοργοῦς V. and D. *Γοργοῖ.*
ἄπληστε· ἐστι ὁς μηδέποτε πλῃρεῖς γίγνεται.
ἐγχέω = pour in.
δύστηνος κακοδαίμων, οὐκ εὐδαίμων.
νίπτω νίψω ἐνιψα· λούειν πόδας εἰ χεῖρας.
εἰλίζω ἐλίξω εἴλιξα εἴλιγμαι.
θᾶττον· ταχέως, θᾶττον, τάχιστα (μᾶλλον ταχέως).
ἵνα λούωμαι, φέρε ὕδωρ.
οὕτως λούονται οἱ Ἕλληνες. πρῶτον μὲν λεκάνην τιθέασιν ἐπὶ τραπέζης κένην. μετὰ ταῦτα ἡ δοῦλη φέρει τὸ ὕδωρ ἐν προχόῃ. ὁ μὲν ἐκτείνει τὰς χείρας, ἡ δὲ δοῦλη πρόχει το ὕδωρ ἐπι τας χείρας, ὁ δε τριβει τας χείρας τῷ σμῆματι.
ἔχει with the adverb expresses a state. *ἔχει κάλλιστα*, that's very nice.

The mistakes *πλῃρεῖς, εἰ* for *πλήρης, ἤ* were due to lack of care on the master's part, and can therefore be avoided by his taking more care to speak clearly. *ἐγχέω* was explained in English, and *προχόη* by means of a picture. A few definitions or explanations from the master's notes on other lessons may now be cited:

πρίων· ὄργανον σιδηροῦν, ἔχον ὀδόντας.
μετανοεῖν· ἀλλάττειν τὴν γνώμην, ἢ ἐθέλειν μὴ ἐμβεβηκέναι.
νεῖν· νέουσιν ἐν τῷ ὕδατι, προφέροντες μὲν τὰς χεῖρας, λακτίζοντες δὲ τοῖς σκέλεσιν.

[1] The following details may be of interest. Form V.: fourth year of Latin, second year of Greek. Average age 15·9. Average mark on term's translations (done without construe, in the manner described): Latin, Tacitus' "Agricola"; upper division 71 per cent., lower division 55·5 per cent. Greek, Lucian, Select Dialogues and passages from Reader, 58 per cent. Best mark: Latin 90·5 per cent., Greek 88 per cent. Worst mark: Latin 42·5 per cent., Greek 57·2 per cent. A full report has been sent to the Board of Education. (Z is not included in this reckoning.)

διαγίγνωσκε· διάταττε τοὺς μὲν ἐνθάδε, τοὺς δ' ἐκεῖ.
οὐκ ἐκόμισα εὖ ποιῶν· εὖ ἐποίησα οὐ κομίσας.
κόραξ· μέλας ὄρνις ὃς κρώζει καῦ καῦ.
κύων· ὁ κύων βαΰζει αὖ αὖ.

I make no apology for offering these details: in no other way can an unfamiliar process be explained. It would be easy to show by further examples how any words or constructions that the master wishes to use may be brought into a lesson. My opinion has, of course, not been based on the above examples only, but upon prolonged experiment with sixth-form work, and upon a carefully planned experiment with two lower forms. It has been fortified, and, indeed, the experiment was partly suggested, by the brilliant success of the same principles as applied to French and German; and I wish to express my hearty admiration for the ability and insight shown in the methods of modern language teachers. There is no department of classical teaching which we may not improve by sitting at their feet.

The line of reasoning sketched above, and the experiments based on it, have led me to the conclusion that there is an enormous waste of time and energy in our classical work. Some claim that classics are useful because they teach English; I think I have shown that if English be taught, classics cannot be taught at the same time, and that the proper economy is to take English by itself and Latin and Greek each by itself. I am also convinced that the use of construing in the classical lesson is a danger to English, because it encourages the misuse of words and idiom, and implants and fosters the habit of writing nonsense. Further, that a true understanding of Latin and Greek can only be got by reading widely in those languages, and that translation as an art can only be taught after both English and Latin or Greek have been made familiar. The material of our work will be got by reading aloud, and its use taught by constant question and answer, summarising, and imitation in the same language, English or other; whilst translation first into English and later from English will form the last stages, to be practised occasionally, and only after other means have been taken to forestall and prevent probable mistakes.

NATURE-STUDY IN THE SCHOOL.[1]

Aim and Purpose.—The justification for assigning to nature-study a prominent place in the school curriculum is that it brings the pupils into direct contact with actualities and occurrences, as distinguished from descriptions and illustrations, that it develops in their growing minds habits of observing and discriminating, of noting resemblances and differences, and of thinking independently, and that it is calculated to foster their natural interest in all that surrounds them, and thus to afford a gentle and unobtrusive guiding of their out-of-school employment so that their everyday activities may open up to them endless sources of relaxation and delight. Looked at in this way, the subject may be regarded as a most valuable instrument for overcoming that divorce between school life and home life which is, in the opinion of many, a serious defect in our system of education.

In every form of nature-study the necessity for dealing directly with natural objects and occurrences is paramount. It is, indeed, of the very essence of the work. From the beginning the pupil should learn, as far as possible, to rely upon his own observation for his facts, and to endeavour to frame his conclusions independently. In those circumstances and at those stages where he can only realise the truth of things dimly and imperfectly, his adumbration of reality must inevitably be more or less shadowy and imperfect. Yet even so, if it be but the genuine outcome of his own effort, it is of vastly greater importance to him educationally than the clearest conception of a mature mind imposed upon him from without. In this lies the value of nature-study. Its function is to stimulate the mind to be critically active rather than passively receptive.

Reading not to Replace Observation.—Wherever an actual first-hand study of things is possible, mere reading about them should never be allowed to usurp its place, nor should diagrams, pictures, or any other representations be employed as substitutes for the things themselves. The main endeavour should be, not simply to impart information, but to quicken the interest of the children in the world around them, to train them to observe accurately, to reason intelligently from their observations, to state and illustrate their conclusions clearly, and generally to form habits of acquiring and sifting out information for themselves. The teacher should, therefore, refuse to be satisfied with setting problems for his pupils to solve, or giving them questions to answer. He should encourage them to propound questions of their own, and to think out lines of study for themselves, always taking care to direct their inquiries into suitable channels.

In a rural school, or in a school in a smaller town, where the teacher has a sufficient acquaintance with the principal geological and geographical features of the surrounding country, its flora and fauna, agricultural practice, industries, and general meteorological conditions, the selection of a judicious course of nature-study will not be a matter of serious difficulty. It would, of course, be unreasonable to expect the average teacher to possess an exhaustive acquaintance with the natural sciences, or even with any one of them. Nor is such expert knowledge at all necessary. At the same time it must be remembered that successful results can be obtained only where the instruction is in the hands of one who has a genuine interest in Nature and her works. If he has made a special study of some particular department, he is all the more likely to be able to imbue his pupils with his own enthusiasm and so awaken their interest in what lies round about them.

Difficulties in Populous Districts.—In the larger towns, where opportunities for the study of nature in the strict sense are of necessity much more limited than they are in the country or in the smaller towns and villages, specifically urban activities may frequently have to be drawn upon for subjects of investigation. A strong endeavour should, however, be made to maintain, as far as possible, the natural character of the work, and teachers in towns would do well to take advantage of the facilities offered by public parks and gardens. Much excellent material for nature-study may be found also in grocers', fruiterers', seedsmen's, florists', and other shops.

A seasonal basis will be found to be the best, as it is obviously the most natural, groundwork for a nature-study syllabus. In fact, if the work is to be rationally carried on in accordance with the principles already laid down, no other arrangement than a seasonal one is feasible. The necessary examples are most readily obtained, work in the class-room and in the field can be most closely linked together, and the whole subject most easily kept in consonance with the pupil's daily experiences if the syllabus is securely founded on the procession of the seasons.

[1] Extracted from the Memorandum on Nature-study and the Teaching of Science in Scottish Schools. [Cd. 4024.]

It follows that the observation and recording of weather phenomena and climatic changes as they occur, and of the development of living things, as far as possible in their natural environment, will be important features of every nature-study course. Effective weather observations are practicable almost everywhere, nor need the study of the phenomena of plant and animal growth be confined to country schools, even if in the cities the surroundings must often be somewhat artificial.

PROGRESSIVE NATURE-STUDY.—The continuous study of a living plant or animal in its natural environment, accompanied by careful, dated records, both graphical and written, of its growth, development, and change throughout the successive seasons of the year, forms an exceptionally interesting and valuable exercise. Studies in the growth of many plants can be carried on away from school altogether. Crocus corms, tulip bulbs, tree seedlings, and such readily sprouting seeds as peas, beans, oats, and barley may be planted, cared for, represented, and described in the pupils' own homes as well as in the school; the system instituted by certain school authorities of supplying suitable bulbs, roots, &c., to those scholars who are willing to look after them in this way has been highly successful, and the Kyrle Society and other bodies have done much good work in the same direction. Or plants and flowers growing freely in garden plots or window-boxes, as well as by the wayside, and selected parts of trees or other suitable subjects in playgrounds or public parks, may be observed and their development recorded by means of dated drawings, descriptions, and measurements.

Corresponding arrangements might be made for some of the more careful pupils to study and record, in part at least, the life-stories of certain animals, such as the frog, trout, butterfly, or snail, to cite only a very few, whenever the subjects can be conveniently kept under suitable conditions. Others might endeavour to trace the development of the young of any familiar animals which they have an opportunity of watching.

NATURE-STUDY EXCURSIONS.—Where practicable, rambles for the study of things in their ordinary surroundings will naturally be frequent, so that each pupil, even in a large school, may be able to participate in as many as possible during the session. These, indeed, along with other experimental and observational exercises carried out by the pupils individually or collectively, and principally in the open air, constitute the really valuable part of nature-study rather than any definite lessons given in the school class-rooms. Every pupil who takes part in such an excursion should be provided with a pencil, a note-book, and a box for objects collected during the outing. A pocket-knife, compass, and small magnifying glass would also be found very serviceable.

Each excursion should have some definite object in view; but the teacher should so direct his pupils that, on one hand, interesting observations are not excluded and individual effort stifled by a too rigid fencing of the subject-matter, while, on the other, their activities are not dissipated in a maze of ill-directed and purposeless observations.

The nature-study excursion should never be regarded simply as a means of procuring material for indoor lessons in school. The special period for nature-study in the school itself should be devoted to suggesting plans for individual out-of-door observations by the children; to talking with them about observations already made or in progress, and directing their minds towards possible solutions; to examining, comparing, and arranging materials gathered at excursions, and noting resemblances and differences which may have been overlooked in the field; and to aiding them gradually to fit their observations into some more or less coherent scheme in which from time to time they can sum up their own results. The idea that all the observation required, or even any considerable part of it, is to be done in school in the time set apart for the subject should be steadfastly discountenanced. It renders real progress impossible.

COLLECTIONS.—The collecting instinct will be brought out strongly in all this work, and must be carefully guided. Any tendency towards the indiscriminate robbing of birds' nests, the ruthless killing of living creatures, or the thoughtless uprooting of rare botanical specimens, merely for the sake of increasing a collection, should be strongly discouraged. Nature-study should lead children to have a deep-seated respect for the rights and feelings of all their fellow-creatures, and should teach them to regard with abhorrence the wanton destruction of what is rare and beautiful.

For purposes of study, comparison, and identification it is useful to have a collection of specimens, which should be in itself an object-lesson in neatness and orderly arrangement; but a school museum should always be strictly regarded as a means towards an end. When collections are made by scholars in connection with their nature-studies, their size should be looked upon as a matter of minor importance, and they should be considered of value only in so far as they serve to illustrate the nature-studies themselves or contribute to the solution of special problems. On this principle collections might be made of the leaves of trees displaying different forms of attachment; of tree twigs showing buds and branching; of seeds and seed-cases illustrating methods of seed dispersal; of seaweeds, for colour and form; of shells, for structure and shape; of deserted nests, for comparison of materials and methods of building; of birds' feathers as illustrations of detailed adaptation to use; of pebbles, rock specimens, ores, and minerals, for geological studies; and so on.

NATURE CALENDAR.—Apart from gathering growing plants for the garden, or seeking new inhabitants for the vivarium or aquarium, and providing material for indoor nature-study, children may take up a most valuable and instructive form of collecting which avoids "necrology," and scarcely deals with dried and preserved specimens at all, but rather aims at making first-hand records of personal observations and actual occurrences in the living and moving world outside by means of sketches, descriptions, or figures. A special note-book for the individual pupil would be set apart for these records. For pupils in the junior division this would be quite a simple book in which sketches and notes might occupy alternate pages. For those in and beyond the senior division a larger book might be supplied, having provision for meteorological records in tabular form, a nature calendar, plotted curves of observations of growth, and drawings in abundance.

CARE OF ANIMALS.—The keeping of living animals in school for nature-study purposes is often a matter of considerable difficulty, and in a number of cases the question of food-supply during the interval between Friday afternoon and Monday morning, and at holiday times, has proved a serious obstacle. With a little care, however, these difficulties can be overcome, and many interesting life-histories may be studied and recorded in the school-room and in the pupils' homes as well.

In no case should the keeping of animals in captivity, either in school or elsewhere, be permitted unless their well-being and comfort can be provided for in a thoroughly satisfactory manner. To make the pupils themselves

individually responsible for these is an excellent discipline; but precautions should always be taken to secure that they never neglect their living charges amid the press of other school duties. Again, wherever captivity is, from the nature of the case, irksome or cruel, it should be absolutely forbidden. A skylark kept imprisoned in a cage is neither a fitting subject for nature-study nor a desirable object-lesson in the treatment of animals.

Schemes of Work.—The scheme of work in nature-study, in every type of school, should, as far as possible, be drawn up on a seasonal plan, with the ever-changing drama of the year as its basis.

A scheme that is too rigidly defined and one that is needlessly discursive are alike open to grave objection. The former is apt to render the work stereotyped and to stifle initiative on the part of the pupils, while the latter usually misses its purpose because it fails to secure a logical connection between the various subjects that have from time to time to be dealt with. The amount of ground covered should not be excessive, and an endeavour ought to be made to secure thoroughness of treatment. At the same time, the greatest care should be taken that the children's interest is never allowed to flag through over-elaboration of particular themes or insistence on comparatively unimportant details. Lack of interest on the part either of teacher or of pupil is absolutely fatal to success in nature-study.

At the beginning of the junior division studies some allowance must be made for the mechanical difficulty of expression—the child's inability either to tell, write, or draw quite as much as he actually knows. This, however, ought gradually to disappear, and the records would accordingly become more complete as nature-study progressed.

But even in the junior division it is desirable to set to the scholars some definite problems in nature-study involving extended series of observations. Thus a seasonal study of some of the commoner trees of the surrounding district or in public parks could be made to extend throughout the whole circle of the year, individual trees being assigned to the different scholars, and their more obvious characteristics, their general resemblances and differences, and the times of their various changes being duly noted. A study of trees carried out in this way would naturally lead to observations on the birds, insects, and animals which visit them. Again, groups of simple seasonal studies, such as might be made of buds or of nest-building in spring, of flowers or of animal activities in summer, of seeds and fruits or of falling leaves in autumn, of evergreens or of the effects of frost and snow in winter, might be arranged for the different seasons, subjects being sought for and examined by the children themselves either during school walks or independently. Drawing will now begin to form a more important part of the records, and will aid greatly in arriving at clear impressions of the subjects studied.

In the senior division nature-study will become more systematic and definite. Where there is a school garden responsible and regular work will be assigned to the pupils, and the various products will be utilised as subjects of study.

The nature-study excursion with a definite object in view will afford material and thought for connected seasonal lessons. For example, the systematic examination of some related groups of plants, such as the buttercup family, would furnish a useful series of lessons extending over a considerable period, and depending largely on out-of-door observations by the pupils and on the consideration of habitat and environment. Similarly, the pollination of flowers might be taken up in the spring and summer months, and such subjects as methods of seed dispersal in autumn and the weathering effects of frost in winter. Seasonal studies similar to those already suggested for the junior division should be continued by the senior division pupils, but in a more intimate and thorough manner, and with clearer and more logical statements of the observed facts and a nearer approach to reasoned solutions. In the country, agricultural practice will give opportunities for continuous studies of various kinds, such as sequence of farming operations, rotation of crops, and effects of weather on growth. In city schools, questions connected with transport and illumination might also be productive of much first-hand observation by the pupils. Building construction, as already suggested in connection with the keeping of a nature calendar, might also supply its quota of material. In all studies of this kind care should be taken to bring out as clearly as possible the relations of these urban activities to natural processes and phenomena. Progressive studies of the growth and development of plants and animals will be carried out much more fully at this stage than was possible in the junior division, and the illustrated records should be of great service in leading to a better understanding of the processes involved.

Nature-study in the classes beyond the stage of the qualifying examination should continue and supplement on more intensive lines the work done in the senior division. The opportunities for individual and accurate investigation are now greatly increased, and work of a more serious nature can be undertaken.

Much of the responsibility for the work in a school garden would devolve upon the supplementary course pupils, among whom the general supervision of the operations might be apportioned. Individual plots would be set apart for the more advanced pupils, and original experiments encouraged as much as possible. The careful keeping of garden log-books by the pupils should not be forgotten.

The school workshop should now prove of real service. In town schools especially, nature-study will benefit by the careful arrangement of the manual instruction syllabus. Exercises in the making of plant labels, flower-sticks, flower-pot stands, and of some of the simpler tools and appliances for gardening operations could be introduced at an early stage of the course. The design and construction of vivaria, including simple observation cases for use in the younger classes, and of nesting-boxes and feeding-tables in connection with the study of local bird life, might follow. Simple pieces of apparatus for study of plant growth and for other experiments could also be devised and constructed by the pupils.

The nature excursions of the older pupils should be largely directed towards gaining a fuller and more accurate knowledge of the general features of the country within their reach. Quantitative investigations on similar lines to those suggested for the senior division pupils, but carried out more intensively than was possible in that division, should now constitute a considerable part of the work. Calculation of results from measurements made, and the plotting of curves from actual observations, should be frequent. In the cities, trade, transport, construction, lighting, heating, and other urban activities might yield much useful material, and thus in some degree help to make up for the inevitable deficiency in those more strictly natural subjects with which the country abounds. In rural schools the local farming practice, the school garden, and

the whole wealth of nature around, will furnish ample opportunities for intensive quantitative work on the lines already indicated. In addition to such exercises, the more advanced pupils might study the interdependence of plant and animal life, and the effect on them of the geological, geographical, and meteorological conditions of the locality, and might finally approach the broad outlook of a more or less complete regional survey.

TEACHERS IN TECHNICAL INSTITUTIONS.

By J. WILSON, M.Sc.
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THE second annual conference of the Association of Teachers in Technical Institutions was held in London, during the Whitsuntide vacation, under the presidency of Mr. Chas. Harrap, St. Bride Institute, London. Besides the presidential address, and the customary dinner, conversazione, excursions, and visits to places of educational interest, papers were read on trade schools, group courses and continuation schools, home work and tutorial classes, and on certain matters of purely professional interest. Although the papers and discussions dealt mainly with technical education, it was, in view of the interdependence of all grades of educational work, impossible to avoid reference to many aspects of secondary education as affecting technical work. Among the points to which frequent reference was made the following may be mentioned.

(i) The necessity for two types of schools for boys and girls between the ages of fourteen to sixteen or seventeen years, the first type of school corresponding with the present type of secondary school, the second to be a trade school (or "preparatory" trade school) with a strong technical bias, to prepare definitely for trades, crafts, and industries.

(ii) The technical institute has to deal, as its raw material, with the product from the primary and secondary schools. Broadly speaking, the primary school feeds more directly the evening classes, and the secondary school the day technical college courses. The general average quality of the material from the primary and secondary schools is far from satisfactory. There is often a marked lack of intellectual "grip" and thoroughness. How far this is a result of the widening of school curricula in recent years it is impossible to say. Signs are not wanting that in many schools the old evils of individual examinations are being replaced by an evil almost as great, namely, the cramming of a number of pupils for the valuable borough and county council scholarships now offered in such profusion.

(iii) The principal items in the curricula of secondary schools which affect directly the work of technical institutions, apart from the teaching of the mother tongue, are the instruction given in elementary science and mathematics. Judging from the students entering the technical schools, this is generally satisfactory in the larger and more modern secondary schools, but there are still many secondary schools in the country where the teaching of scientific subjects in general is so fragmentary, badly organised, and unpractical, as to be almost worse than useless. As a result, the day technical schools and colleges have to devote much valuable time, space, and equipment to work which should have been completed in the secondary school.

(iv) The need for a common matriculation or "school-leaving" examination for admission to all British universities, the professions, and day technical colleges, in place of the multiplicity of examinations and examining bodies existing at present. Coupled with this is the necessity for a revision of the syllabuses of some of the chief matriculation examinations as at present conducted.

(v) Much stress was laid by various speakers upon the unity of the teaching profession, and the need for joint effort by all branches of the profession for the improvement of education and the professional status of the teacher. Arising out of this is the question of the "registration" of teachers and the constitution of the Teachers' Registration Council, this again pointing the way to the possible solution of a still wider question—how to establish some form of federation of all English professional educational associations.

HISTORY AND CURRENT EVENTS.

"IF what are sometimes spoken of as the ruling classes of this nation do not take the trouble to study the problems and conditions of the Empire they are not fit to continue in their place of honour. If the labouring man, who rightly enough aspires to lift himself to a position of influence, does not take the trouble to inform himself about the Empire, the circumstances under which it has grown up in the past and is held in the present, he is not fit for holding in his hands the destinies of the nation." So said Dr. Parkin at the beginning of May last, and his remarks were received with "cheers." The last extension of the franchise in this country was made nearly a generation ago, before the "Empire" loomed so large as it does to-day. It was supposed that the beneficiaries of our various "reform" Acts could understand the problems submitted to them. But now it is the question of an "if." Some are asking if it is well that a confessedly ignorant electorate should have the control of the Empire. They might be able to manage England, or Scotland, or Ireland. Can they ever understand the Empire? If not, what is the result? or what must be done?

WE do not govern Egypt as we govern the Empire at large. Sir Eldon Gorst's first annual report has lately been published, and we are glad to see it is as illuminative as were those of his great predecessor, Lord Cromer. He says that in the elections held in that country for the renewal of the Assemblies, only a very small proportion of those on the registers voted in the first stage (elections there have two stages; the voters choose electors, not members of the Assemblies), and draws the conclusion that "the country is very far from having arrived at the stage when anything in the nature of really representative institutions is possible." Happy Egypt, to be saved from the consequences of its own ignorance!

THE poet-prophet of the Brito-Irish Empire, Rudyard Kipling, represents England as saying to the cities of the Empire:

"Look, I have made ye a place and opened wide the doors . . .
That ye may talk together, brother to brother's face—
Thus for the good of your peoples . . ."

Here are some recent illustrations of the talk: "Canada should assist the Mother Country at least to the extent of being able to defend ourselves on our soil. . . . We are not disposed to pay any money to support a navy in the control of which we have no direct interest." The Australian Federal High Court has decided the dispute

between the Commonwealth and the New South Wales authorities over the question of duty on some wire-netting imported by the State Government. "New Zealand did not desire to interfere with British politics, but thought the Colonies were within their rights in asking for a preference. He (the New Zealand Premier) regretted the Canadian treaty with France, as he thought that such arrangements between British colonies and foreign nations were the beginning of the overthrow of the commercial supremacy of the British Empire."

FINALLY, we listen to the elected part of what still does duty as an "Imperial" Parliament. In May last they were making new arrangements for the reporting of their speeches, since "newspapers no longer devoted the same space to Parliamentary matters as formerly, and tended to substitute short sketches of Parliament for the reports of speeches." "Many people," said one speaker, "regarded the reports of debates as very dull reading, although it was difficult for those having seats in that House to realise the sad fact"; while another member "feared that the reporting of speeches might stimulate members to prolixity." What a distance we have travelled since, in the early years of George III.'s reign, the House of Commons waged war against anyone who should report anything of what was said or done within their precincts! Or—is it the same body as was then called "the House of Commons," that now wants reporting? There was a revolution in 1832.

ITEMS OF INTEREST.

GENERAL.

THE autumn meetings of the Incorporated Association of Assistant Masters in Secondary Schools will be held on September 9th and 10th at the Mathematical School, Rochester. The council will meet on the first, and the general meeting of members will take place on the second day.

THE Board of Education has received through the Foreign Office information that an exhibition will be held from August 15th to October 15th next at Faenza to commemorate the third centenary of the birth of Evangelista Torricelli. The exhibition will include international sections for meteorology and terrestrial physics, ceramics, and agricultural machinery. Prizes will be offered for competition in the two first-named sections. Inquiries should be addressed to Conte Cav. Carlo Cavina, president of the executive committee, at Faenza.

THE Board of Education has received from the German Embassy through the Foreign Office particulars of the International Congress of Historical Science which is to be held this year in Berlin from August 6th to 12th. The work of the congress will be carried on in general and sectional meetings. There are eight sections as follows: Oriental history; history of Greece and Rome; political history, mediæval and modern; history of civilisation and the history of thought, mediæval and modern; legal, social, and economic history; ecclesiastical history; history of art; sciences subsidiary to history. Many distinguished Continental historians are taking part in the congress, and the committee contains such well-known names as those of Profs. Eduard Meyer, Adolf Harnack, Friedrich Delitzsch, Ulrich von Wilamowitz-Moellendorff, and Gustav Schmoller. At some of the general meetings lectures will be given by Prof. Maspero, Prof. Cumont, Sir Frederick Pollock, Sir William M. Ramsay, and Prof. Monod and others. Copies of the programme can be obtained from the secretary of the congress, Dr. Caspar, Kaiser-Allee 17, Berlin W. 15.

A FREE public exhibition will be held on July 3rd and 4th at the L.C.C. Central School of Arts and Crafts, Southampton Row, W.C., of selected works submitted by candidates in connection with the art scholarships and exhibitions awarded by the London County Council. It may be of interest to note that the Council annually awards thirty school of art scholarships for two years, which may include a maintenance grant not exceeding £50, with free tuition in the daytime at an approved London school of art; ten artisan art scholarships of £20 a year for three years, twenty artisan art scholarships of £10 a year for three years, and 120 evening art exhibitions of £5 a year for two years, tenable at evening schools of art.

MR. CLOUDESLEY BRERETON, divisional inspector to the L.C.C., has been invited as the foreign guest for the year to attend the annual congress at Cleveland of the National Education Association of America, and to read a paper on "Vocational Education." It is estimated that the congress will be attended by 50,000 educationists representing all grades of education from the heads of universities downwards.

AN extraordinary general meeting of the Incorporated Association of Assistant Mistresses in Public Secondary Schools was held on May 23rd at the High School, Winchester. After the discussion of questions of a non-educational character, the following resolution, passed by the London Federal Council, was discussed: "That the matriculation for the universities of Great Britain and Ireland should be of a common standard, with a view to the interchangeability of certificates." The resolution was accepted with the addition of the words, "provided that the standard be not lower than that of the London Matriculation examination." The president, Miss E. M. Bancroft, gave a short sketch of the work which the association has done for teachers and the cause of education in the past, and the work before it in the future. Mr. Charles Godfrey, headmaster of the Royal Naval College, Osborne, read a paper on "Why are Mathematics Taught in Girls' Schools?"

THE annual conference of the Association of Headmistresses was held at Manchester on June 19th and 20th. Mrs. Woodhouse, of the Clapham High School, occupied the chair, and delivered an inspiring presidential address. Unfortunately, we are unable to find space this month for a summary of the address or accounts of the papers read at the conference, and are compelled to limit ourselves to a statement of the resolutions adopted on subjects of wide educational interest. These resolutions are as follows: (1) That the examination for junior scholars should be limited to English and arithmetic, and in the case of those candidates who reach a satisfactory standard should be supplemented by an oral examination. (2) That this conference disapproves of external examinations for girls under fifteen years of age, and invites all members of the association to co-operate in discouraging pupils to enter for them. (3) That in all public external examinations after the age of fifteen acting teachers in every case be associated with the universities or other external authorities. (4) That the length of the Easter holidays, or of the Easter and Whitsuntide holidays combined, in girls' secondary schools should be not less than four weeks, and should always include Easter. (5) That this conference observes with

regret the delay in the constitution of the Teachers' Registration Council, for which the reasons alleged by the President of the Board of Education, in answer to questions in the House of Commons on June 17th, do not appear to be adequate. The deputation of representative teachers referred to included representatives of technical education, and proposed the constitution of a council on which representation should be given (1) to the Association of Teachers in Technical Institutions and (2) the Association of Technical Institutions. The conference is unable to understand the hesitation of the Board unless it is intended that teachers of special subjects—*e.g.*, music, drawing, classics, science, and modern languages—should, *as such*, be represented on the council.

THE Board of Education has recently issued regulations somewhat modifying the arrangements hitherto in force for the medical examination of candidates for admission to training colleges for elementary-school teachers. Henceforth the medical examination may be made by either the medical officer of the college or by any of the medical officers nominated by the Board for the purposes of the Elementary School Teachers (Superannuation) Act, 1898. If the authorities of any particular college wish to make it a condition of admission that all candidates should, before being definitely accepted, be seen and examined by the medical officer of the college, they may do so—on condition that any expenses connected with this examination be defrayed by them, and therefore no fee can be charged to the candidate. If the college authorities do not insist on examination by their own medical officer, candidates must be given the option of being examined by any of the medical officers nominated by the Board as stated above. In this case a fee not exceeding 10*s.* 6*d.* is payable by the candidate, and a similar fee may be charged to any candidate who applies voluntarily to be examined by the college medical officer. The examination, the result of which must be entered on a prescribed form of certificate, is intended to ascertain the physical fitness or otherwise of the candidate to meet the strain entailed by the two or three years' course of study on which it is proposed to enter. "It will not deal expressly" with the question as to whether the health of any candidate is such as to enable him, without undue strain, to enter upon a course of study leading up to a university degree, but the relation of the facts ascertained with regard to the candidate's physical condition must be taken into consideration in connection with such an eventuality by the college authorities. According to the results of the examination, the candidate will be placed in one of three classes, representing respectively: (A) robust and healthy individuals; (B) those found at the time of examination to be physically below normal, but not to such an extent as to place them in (C), which includes those who are unfit for acceptance as teachers by reason of present physical disability or of defects likely to shorten the full term of active service. Candidates must be given at least a fortnight's notice of the date by which the medical certificate must be furnished. The certificate, when filled in, must not be shown to the candidate, nor must it pass directly through his hands. It does not take the place of the further examination which the candidate must, as heretofore, pass at the end of his two or three years' course of training in accordance with the requirements of the Elementary School Teachers (Superannuation) Act, 1898.

IN an article in the *Federal Magazine* on public instruction in Crown colonies, Sir Charles Bruce gives an instructive general account of the educational system of Mauritius, which was originally organised by him. The main object of the educational authorities in the island is, the article says, "to secure a practical connection between education and employment in every gradation of social life. And there are probably few administrative units of the Empire that offer to the children of the community, without distinction of creed or colour, a higher class of education on more generous terms. A clever boy of European, African, or Asiatic descent can receive a first-class public-school education, proceed to a university of the United Kingdom, equip himself for any profession, and rise to any position of trust and emolument in the colony without costing his father a rupee."

THE first two numbers of a daintily produced magazine, *The Country Home*, published by Messrs. Archibald Constable and Co., contain articles on horticultural colleges for women. In the first number the college at Swanley is described by Sir John Cockburn, and he summarises the course of work arranged to prepare women for horticultural pursuits. We have referred to the work at Swanley on several occasions in these columns, and our readers know already that the college has been successful, not only in training teachers of nature-study, but also in equipping women with the knowledge and experience necessary to become successful gardeners. The "Women's Horticultural College," founded by Lady Warwick at Studley Castle in 1898, is dealt with in the second number of our new contemporary by Mr. M. M. Mallock. Here training is provided in horticulture, poultry-keeping, bee-keeping, dairying, pickling and preserving, as well as other technical subjects. Both articles are beautifully illustrated, and are instances of the attractions which *The Country Home* offers to its readers. The magazine, the price of which is sixpence net, will prove a favourite with all who live in the country or desire to do so.

SCOTTISH.

THE Education (Scotland) Bill continues "to drag its weary length along" through the Grand Committee. Progress is at the rate of only a clause per day. Every word of the Bill has to be beaten out on the anvil of hypercritical discussion. All this is done, not out of ill-will to the Bill, but seemingly from mistaken zeal. Pride of place as a critic must be yielded to Mr. Caldwell, deputy chairman of committees. Every exploded doctrine of educational policy found in him a zealous advocate. Payment by result, individual examination, unlimited competition, in short, were the principles he desired to see reigning in every school. On one clause alone he spoke for more than forty-five minutes, his remarks covering every theme from the title-page to the appendix. No wonder the chairman, Sir Henry Holland, declared at the following sederunt that unless the rate of progress was expedited the Bill would not be finished until 1910. He deprecated more especially members making second-reading speeches during the committee stage, and it is pleasing to learn that Mr. Caldwell had the grace to blush at this remark. The members of the Opposition have shown the utmost self-restraint in this matter. Sir Henry Craik, though possessed of an unrivalled knowledge of the subject, has only intervened where absolutely necessary.

MR. SINCLAIR, Secretary for Scotland, in reply to a deputation of members of the leading school boards, gave the outlines of an alternative pension scheme for teachers that he is prepared to submit. The chief objection to the pension scheme of the Bill is its permissive character. The smaller boards cannot or will not take advantage of its clauses, and to that extent the object of the pension clauses

will be defeated. Mr. Sinclair stated that he is prepared to submit a scheme based on proportional contributions from teachers, the local authorities, and the Education Department. He suggests that teachers should pay 3 per cent. on their salaries, while the Department and local authority or managers should pay other 3 per cent. between them. Mr. Sinclair stated that he will only go forward with such a scheme provided a strong demand is made for it by all parties interested. In response to this appeal the various associations of teachers, after consideration, have cordially accepted the principle of the alternative scheme, while the leading school boards have also expressed general approval. It is earnestly hoped the present opportunity will be taken to settle once for all, on a satisfactory basis, a question that has given rise to much feeling in the past.

Summer vacation courses have again been arranged in Edinburgh University from July 29th to August 28th. The subjects include English, French, and German. A distinguished staff of English and foreign professors has been secured. The fee for the whole course, comprising sixty lectures, in addition to practical lessons, is £2. These classes have been a great success in previous years, and the extended courses this year should attract an even larger number of students.

The attitude of the Department on the question of the registration of teachers has been marked by extraordinary muddleheadedness from the outset. It is generally believed that the head of the Department is not responsible for this, but some junior officer. The Department's right to create a register without a special Act of Parliament has been challenged. Though the Department claims that it has been acting within its powers, it now declares that no register is intended, that all it seeks is to have, for the sake of convenience, a list of duly qualified teachers in secondary schools, and of the positions they occupy there. Accordingly, recognition forms have been sent out that mean absolutely nothing. Teachers filled up forms in order to obtain "recognition as specially qualified teachers in secondary (including intermediate) schools." Instead, they are told that their names have been recorded in the Department's books as having occupied a certain position—principal or assistant—at a particular date. No forms were required to get such information, or at least no such elaborate forms as 49 T. But the Department evidently has made a complete *volte face*. It seems to have recognised that its first action was *ultra vires*, and instead of acknowledging this, it covers up its track by giving a quite superfluous, and in many cases a wrong, piece of information. The outcry among teachers is universal, and the Department will certainly be called to a strict account in this connection.

The opposition to the financial clauses of the Education Bill has been so great that the Department has been compelled to make some concessions. Generally, the effect of the original proposals was to give most money to the poorest districts. This was a proposition that had universal support in theory, but when it was found that in practice the richer districts would have to accept smaller grants than in the past, they were up in arms against it. The Department, therefore, has agreed to give the bulk of the money on the old basis, and only a certain proportion on a differential scale. However much this is to be regretted on educational grounds, it is better than to risk determined opposition to the Bill.

It is officially announced that Prof. Hume Brown has been appointed Historiographer Royal for Scotland in the place of the late Prof. Masson. Prof. Hume Brown is recognised as one of the foremost historical scholars in Britain, and certainly the leading living historian of Scotland.

IRISH.

For intermediate teachers the most interesting news this month is what has not happened. At the time of writing, the Rules and Programme for the school year beginning next August have not yet appeared. Why this is the case is not known. Mr. Birrell, answering a question in reference to this matter in the House of Commons some weeks ago, produced the impression that there was a difference of opinion between the Government and the Intermediate Board. The latter's Rules and Programme were ready at Easter, but have been referred back to them. The result is, however, a serious inconvenience to the schools. The pamphlet must lie on the table of the House of Commons for forty days, during which time objection may, as was the case two years ago, be raised; and so it is clear that we cannot be certain what the arrangements for next year will be until Parliament is prorogued, *i.e.*, until the middle of the holidays—a very unsatisfactory state of affairs.

During the discussion in committee of the University Bill, Mr. Butcher has spoken of the useless doles given away by the Intermediate Board, and Mr. Birrell seems anxious to make provision whereby the Intermediate Board shall provide bursaries or other similar means to enable poorer students to graduate in the new universities. If these hints mean that more of the intermediate funds are to be diverted from the schools, it will indeed be a case of robbing Peter to pay Paul. The grant to intermediate schools is now only £50,000 instead of £58,000, as it was five years ago, while the grant per head, not of pupils in the schools, but of pupils examined, averaged in 1907 only £4 5*s*., as opposed to £7 5*s*. in 1903. We have never heard it maintained that Irish teachers are overpaid, and we would recommend the authorities to compare this grant with the grant to schools under the Board of Education, which is on a larger scale, is paid for a longer time, and on all pupils, not counting the local grants. If intermediate education is to be reformed, and the reform is long overdue, let it be done in a comprehensive scheme which will take account of all the facts, and let Irish secondary schools be treated on the same terms as the English and Scottish.

The Catholic Headmasters' Association has published the report of its spring meeting. This deals, first, with the reasons, as given in these notes last month, why the Joint Committee refused to set forth its views before the Intermediate Board in the form of a memorial after being led to expect that permission would be given to present such views personally. The association has asked the Irish members of Parliament to take up the cause of the committee, to oppose any proposal to fix the rules for ten years, and to discuss any objectionable rules if the Government grants facilities, and to raise the question of the refusal of the Government to increase the grant for intermediate education. The meeting also resolved to request the Intermediate Board to reserve all superintendentships for those who are actually engaged in teaching in intermediate schools, and to require medical certificates of freedom from defects of sight and hearing from candidates for superintendentships. It passed a resolution against the special papers set in intermediate examinations, and another against one school endeavouring to attract pupils

from another by offering lower terms or by similar means. The Convent Schools' Committee further resolved that the attention of convent schools should be directed to the great importance of girls who intend to take a university course beginning Latin in good time, and, again, that the Intermediate Board be requested to see that the books prescribed in Irish for a pass in the middle grade should be by the same authors as are prescribed as standards of style for honours.

THE discussion of the University Bill in committee is marked by the appearance of all the old and stale arguments which have characterised all political and religious questions concerning Ireland. The small group of Ulster members is trying to fetter the new universities, especially the Catholic one, with various kinds of religious restrictions. If effectual they would destroy the Bill, a result which would delight the Ulster party; but what of Ireland? The supreme interest of the country demands that the university question should be settled. There is no ideal scheme, and the settlement demands compromise. Those who would refuse the affiliation of Magee College, Londonderry, to Belfast University, because they wish to exclude Maynooth from affiliation to the Catholic University, do not seem to realise that the affiliation of Maynooth means, in any case, a raising of the standard of the education of the Catholic priesthood, and that the terms of affiliation are in the long run, if not immediately, bound to be decided on academic grounds. They seem to be obsessed by a belief that Catholics will inevitably desire a low and narrow standard of university education, and to forget that, if this is so, it will inevitably ruin Catholic university education. Mr. Campbell, the member for Dublin University, is so impressed by what he considers the sectarian tendencies of the Bill, that he has proposed a federation of Trinity College and the Queen's College, Belfast, into a single university in order to maintain in Ireland a non-sectarian university. Such a scheme seems impracticable. Why not trust to the influence of education to widen men's views and to prevent university education from running into narrow sectarian grooves? More important questions are the constitution of the governing bodies of the universities, the adequacy of the grants proposed, and the desirability of making the universities residential like Oxford and Cambridge, or merely teaching institutions like the more modern English universities and the Scottish universities.

WELSH.

THE new "Red" book, as the publications of the Welsh Department of the Board of Education are termed, was awaited with much interest. It contains the regulations which will be in force in the secondary schools of Wales and Monmouthshire from August 1st next. Like the English regulations, it has its prefatory memorandum, which states that, with the additional funds now at its disposal, the Board is able for the school year 1908–9 to pay grants to secondary schools in Wales on the same scale as in England. The chief alterations announced in the new regulations are: (1) the increased grants; (2) the extension of the period during which grants may be paid on account of pupils; (3) the altered conditions under which grants will be payable.

IN regard to the payment of grants, the regulations provide that, in the case of secondary schools placed on the grant list and complying with these regulations, grants will be payable on account of pupils receiving instructions in accordance with an approved curriculum as follows: (*a*) A grant of £2 on account of each pupil who was more than ten, but not more than twelve, years of age at the beginning of the school year, who had been for at least two years under instruction in a public elementary school immediately before entering the secondary school. Pupils transferred from a school in which they were eligible for this grant will continue to be eligible for it in the school to which they are transferred. (*b*) A grant of £5 on account of each pupil who was more than twelve, but not more than eighteen, years of age at the beginning of the school year.

WITH regard to Welsh, this subject is given the same place in the curriculum as was accorded to it in the regulations of 1907. The Board is "glad to note that this important subject is gradually attaining its proper place in the curricula of the schools." It may be interesting to give here the statistics in the last report of the Central Welsh Board. There were sixteen papers set in Welsh, distributed over forty-nine schools. 220 pupils took the honours stage, 593 the senior stage, 906 the junior stage. This makes altogether 1,719 pupils taking Welsh in 1907. In 1906 the total was 1,446, and in 1905 1,131. Comparing these numbers with French, we find ninety-two schools offered French; the total number of pupils examined in French in 1907 was 6,618—again a large increase on previous years. The report of the examiner in Welsh is: "The character of the work in Welsh continues to show improvement."

AN important suggestion has been made by the Denbighshire Education Committee. At present, scholarships from the county schools are given by each county education committee on the result of the examinations of the Central Welsh Board. But this may lead to some pupils receiving county exhibitions although low down on the lists. The consequence may be that such pupils may not be nearly so well fitted for proceeding to university studies as others who receive no exhibition. Now if all the counties were to give a sum of money for the purpose of providing exhibitions to the Central Welsh Board, according to their rateable value, instead of each county confining its exhibitions to the boys and girls of its own area, the best scholars would be chosen in the country, irrespective of the area in which they live, and only those capable of undertaking good university work would be chosen. Denbighshire is considering this matter, and, should the Education Committee determine to adopt the suggestion, will submit the proposal to the other county education committees of Wales for a joint scheme.

IT will be remembered that the late Mr. Eyton Williams left by will £10,000 to the University of Wales for the foundation of scholarships and prizes, and the same amount to the University College of North Wales, Bangor, for the same objects. The question arose whether the gift was conditioned by a memorandum in existence when the will was made, in which the testator attached two conditions of a theological nature to be obligatory on every winner of a prize in a competition, viz., the belief in God and the acceptance and belief in the Protestant faith. The case came before the Chancery Division of the High Courts of Justice, and it was decided that there was a clear gift to the University and to the College, and that the gift was not qualified by any conditions.

AT a meeting of the Cardiganshire Teachers' Association last month, Prof. Anwyl spoke of the several varieties of Welsh temperament, and said that two types deserved the special attention of Welsh educationists. One

was that of the boy and girl of real ability, but oppressed with diffidence. It was possible that the remoteness of Welshmen from large centres, their conquest as a race, and the narrow means with which high mental ability was often associated, combined to make this type more prevalent than in many parts of the country. The second type was one the ambition of which was not commensurate with its ability, and its ambition was often not its own so much as that of its friends and relatives. This over-eager and sanguine type was apt to appear in countries where knowledge and its prizes were esteemed.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

V. Hugo, Quatre-vingt-treize. Edited by C. Fontaine. vi+250 pp. (Heath.) 2*s*.—The editor has abridged Victor Hugo's novel very skilfully, bringing it within the compass of 193 pages. Notes on the author's life and on the historical events preceding 1793 give useful information. There are twelve pages of notes, which supply all that is required. We even learn that Jersey is a British island and Guernsey an English island (p. 196)—a distinction of which we were not previously aware. The grammatical notes are good, except for the strange explanation of *grand'gardes*, according to which "this apostrophic form is a relic of the accusative case in old French; cp. *grand'rue, grand'messe*, &c."! *Flottible*, on p. 226, is the only misprint we have noticed.

Racine, Les Plaideurs. Edited by C. H. C. Wright. x+104 pp. (Heath.) 1*s*. 3*d*.—Mr. Wright gives in his introduction a chronology of Racine's life, an account of his one comedy, "Les Plaideurs," a summary of the play, and a bibliographical note. The text is nicely printed. The notes are good, apart from a few lapses into American slang, such as "what a yawp!" and "such a circus" (for *une telle fête*). On the whole, a nice little edition.

A. de Vigny, Poésies Choisies, and *Lamartine, Premières Méditations Poétiques.* Edited by A. T. Baker. 48 pp. and 40 pp. (Blackie.) 4*d*. each.—These are really excellent contributions to Messrs. Blackie's "Little French Classics." Prof. Baker's editorial work reaches an exceptionally high level of excellence, and we hope that he will give us some more work of this kind, none the less helpful because it is unpretentious.

R. Morax, La Princesse Feuille-Morte. Edited by A. P. Guiton. 40 pp. (Blackie.) 4*d*.—This pretty story and, we must confess, its author were previously unknown to us. It is suitable for the intermediate stage; the language presents few difficulties. The notes are generally satisfactory. It is wrong to say that in old French "*grand* n'avait pas de féminin" (p. 29), for *grand* was used for the feminine, and, as a matter of fact, *grande* is also found very early. There is a *questionnaire* dealing with the subject-matter of the text and some points of grammar.

Le Chevalier du Guet. Féerie en un acte. By E. Magee. 31 pp. (Blackie.) 4*d*.—A fantastic play with music, suitable for performance in girls' schools. It is well written and interesting. Perhaps it would have been better to give the stage directions in French. The only slips we have noticed are *ça* for *çà* (p. 10), *centure* for *ceinture* (p. 22).

Teachers' Handbook to Mackay and Curtis's First and Second French Books. 192 pp. (Whittaker.) 1*s*. net.—This contains a reprint of the directions to the teacher included in the first version of the First French Book, and notes by Mr. Mackay on the Second French Book. The suggestions are well put, and teachers using these books will be glad to have the notes in a separate book. It is undoubtedly a mistake to include hints for the teacher in the pupil's book.

French Phrases for Advanced Students. By E. J. Kealey. vi+97 pp. (Pitman.) 1*s*. 6*d*.—Mr. Kealey has collected some 3,000 phrases, and has classified them under such headings as "Attendre," "Autre," "Belle," "Buy," &c. The English and French are given in parallel columns. When familiar or vulgar expressions are given, they are indicated as such. The book seems to us a conscientious piece of work, which should prove useful.

Classics.

Virgil's Messianic Eclogue: its Meaning, Occasion, and Sources. Three Studies by J. B. Mayor, W. Warde Fowler, and R. S. Conway, with the text of the Eclogue and a Verse Translation by R. S. Conway. xii+146 pp. (Murray.) 2*s*. 6*d*. net.—It is remarkable that these three papers, which were written independently, are so complementary that together they form a fairly complete treatise on the poem. Prof. Conway is chiefly concerned with the question of Virgil's purpose and the connection with Pollio; Mr. Warde Fowler asks: Who was the child? and Mr. Mayor examines the sources of the poet's peculiar ideas and imagery. Prof. Conway sees in the Eclogue and in many other passages of Virgil a deep sense of the guilt of the age, and the expectation of a coming deliverer. The peaceful and settled time that Augustus had brought in seemed well suited to the birth of the deliverer, and the Messianic tone of the poem has been recognised fully by Christendom; we all remember the part played by Virgil as Dante's guide, and the presence of the Cumaean Sibyl in Christian art. The facts are well presented in this paper, which has, however, a touch of sermonising, and one extraordinary note (p. 14), with a quotation from an ephemeral novel, that reminds us of the quotations in American books. Mr. Fowler, after a careful examination of the evidence, comes to the natural common-sense conclusion that the mother was a real mother, and the child a real child, that they could not have been of any other family than the Caesars, and, finally, that the persons were Scribonia and the child she was expected to bear in the year 40. When this child turned out to be a daughter, it is to be noted that Octavianus put his wife away as though disappointed; but the poem was afterwards allowed to come forth, because its feelings and aspirations for the future of Italy still held good, and its references were not so clear that they could be identified. We must not omit to direct attention to the convincing explanation of the last two lines of the poem, which have always been a puzzle; it is the child that smiles (in *qui non risere parentes*, the last word is the object, and this explains the corruptions); and there is an allusion to a custom of laying a *mensa* for Hercules and a *lectus* for Juno at the birth of a noble Roman babe. Mr. Mayor collects parallels to thought and imagery from the Hebrew scriptures, and maintains that Virgil may well have heard or read something of them. We know Longinus did. This is a singularly attractive booklet, which deserves a place in every classical library.

The Odes and Epodes of Horace. Translated into English verse corresponding with the original metres by John Marshall. xxvii+308 pp. (Dent. The Temple Greek and Latin Classics.) 2*s.* 6*d.* net.—Every reviewer who meets with a new translation of Horace says that the translator is a bold man, and that the road is strewn with the bones of his predecessors; so we will not. We have to admit, however, that Dr. Marshall lacks the vital spark. His version has considerable merits, we are glad to add; the metres are managed with great skill, and the language is often happy; but there is a certain touch of the artificial in many of the odes. This is shown in omitting the article, in inverted constructions, and other familiar tricks. The charming dialogue, for example, between Horace and Lydia reads more like a pastoral of the eighteenth century than anything else. When else could a poet bring himself to say, as Dr. Marshall does:

"With thee I'd gladly live, with thee expire"?

In the serious odes the translator is more at home, and it gives us pleasure to quote a few lines which show him effective (iii. 2):

"How best the pinch of hardship to endure
Let the young Roman learn in stress of fight,
Till he can match fierce Parthian's flight
And ply a spear as sure.
Amidst alarms let his young days go by,
The sky his tent. Then when some king's at war
Let spouse or daughter watch afar
And from the ramparts cry . . ."

Even here how much stronger the seventh line had been with wife or bride instead of spouse. The beginning of the next ode is good also:

"The man that's just and resolute of mood
No craze of people's perverse vote can shake,
Nor frown of threatening monarch make
To quit a purposed good."

The translator contributes a good introduction, partly critical and partly biographical, with a number of notes explaining allusions which the English reader might not understand. The text is printed opposite the translation, as in the others of this series.

English.

Mason's New English Grammar (Junior). Revised by A. J. Ashton. (Bell.) 1*s.*—This is the first part of a revision of Mason's English grammars; two others are to follow: the intermediate and the senior. That the original works now revised had many merits is not to be denied, but we hardly think that the new editor has fully used his opportunities. We do not complain, for the moment, that he has followed his model in giving us a kind of reference book or summary, instead of deducing principles from practice; for we are aware that the use of this kind of grammar to codify experience may in some teachers' hands be extremely valuable. But we cannot help thinking that even as a summary the treatment is sometimes unnecessarily forbidding. What is a poor child to do when he is told, with no introduction and precious little illustration, that the "subjunctive mood is used when we speak of an action or event, *as something that we only think of*, without declaring or supposing it to be a matter of fact"? We fear that the absolutely satisfactory English grammar for young pupils has not yet been written in this country.

Essay and Letter Writing, with Models and Outlines. By F. H. Brooksbank. (Macmillan.) 2*s.* 6*d.*—This book consists of three parts: essay-writing (a brief exposition of principles), models and outlines of essays, and letter-writing. There are also additional subjects for essays, and an interesting selection from papers in public examinations. The book as a whole will doubtless prove useful to many teachers who are exposed to the wooden requirements of examining boards; but we cannot say that we find it inspiring. The author does not seem to have determined quite definitely his scope and purpose. It is with a start that we pass from one page on which we are reminded that a full-stop really requires that a following sentence shall begin with a capital letter, to another on which we are told that "litotes is a figure of speech in which a negative is used to form a circumlocution such that more is conveyed than is actually expressed." Truly the art of reviewing is sometimes wonderfully akin to "litotes." But as a manual of general information on subjects as diverse as palm trees and bicycles, the book has much to recommend it. The "outlines" are accurate, although the questions are sometimes too difficult.

The Sounds of English. An Introduction to Phonetics. By Henry Sweet. (Clarendon Press.) 2*s.* 6*d.*—The author intends this book to serve as an introduction to his well-known "Primer of Phonetics." We welcome it most cordially, and will content ourselves with laying especial stress upon its last twenty pages. These are devoted to a chaper on "The Teaching of Phonetics," and discuss frankly and luminously such all-important topics as phonetics in language-teaching, qualifications of the teacher, qualifications of the learner, ear-training and examining in phonetics. The cogency of the author's views will be best understood by a few quotations: ". . . begin with a phonetic transcription, and keep to it for at least a year, the nomic spelling being kept entirely in the background till the pronunciation has been thoroughly acquired." "Rational elementary language-teaching without phonetics is impossible." ". . . Begin not with a foreign language, but with the systematic teaching of elementary phonetics and elocution in connection with the study of the native language." "Phonetics cannot be crammed up from text-books: learning definitions by heart is not learning phonetics." We have only to add that an exceptionally good bibliography—critical and not lengthy—adds to the value of an excellent book.

History.

The Development of Modern Europe. By J. H. Robinson and C. A. Brand. xi+362 pp. (Ginn.) 6*s.* 6*d.*—We gather from the cover, though not from the title-page, that this is the first volume, and we suppose there is to be a second. That would account for the fact that there is no index. The authors give us a sketch of European history from 1660 to 1783 in some hundred and twenty pages, and then, what is evidently their main subject, a description of eighteenth-century Europe, followed by an account of the reformers, Encyclopedists and Despots, of the French Revolution and Napoleon, and finally of the Congress of Vienna. There are twenty-two maps, five portraits, and detailed references to books useful for further study at the end of each chapter. It is interesting to see European history as viewed from the other side of the Atlantic. They are not much interested in the details of our wars, and we find, therefore, we have marked several passages in the first part of the book which are capable of improvement; but the later part we have read with much pleasure, and we know no better account on a similar scale of the forces that were in the eighteenth century shaping the nineteenth. The authors have

mentioned the reforming monarchs and given an excellent account of their work, but have omitted the names of their ministers, Pombal, &c. On the other hand, there is a useful account, with illustrations, in detail, of the secularisations of 1803.

The Industrial Revolution. By W. Cunningham. xxii+484 (403–886) pp. (Cambridge University Press.) 5*s.* net.—Since Dr. Cunningham first wrote his work on the Growth of English Industry and Commerce some twenty-five years ago or more, it has grown with every new edition. In 1892 it was expanded into two volumes, and now the second volume is divided into two "parts," so that the whole is contained in three volumes costing altogether thirty shillings net. The book before us is a reprint, for special purposes, of those parts of the second volume which deal with the years 1688–1850 (*circa*), and are entitled "Parliamentary Colbertism" and "Laissez Faire." To praise the book is superfluous, for Dr. Cunningham is the master, *par excellence*, of the English school of historical economists, and no better book on the subjects treated could be found.

Readings in English History from Original Sources. Book III. (1486 to 1688). By R. B. Morgan and E. J. Bailey. 222 pp. (Blackie.) 2*s.* 6*d.*—Fifty-one extracts from contemporary, or at least nearly contemporary, writers in modern spelling, several pictures, an "analysis of sources," a list of chief dates, and a bibliography of "tales and monographs," such are the contents of this good book, which, wisely used, will be of service to our classes in English history.

Sea Kings of Britain. Hawkins to Blake. By G. A. R. Callender. 215 pp. (Longmans.) 2*s.* 6*d.*—Short biographies of five admirals, Hawkins, Drake, Howard, Grenville, and Blake, avowedly compiled from the works of our best writers on these subjects, and with long extracts from Froude and others. There are some fourteen plans, some poetical quotations, and an index. Altogether, we should think it a good book for the students of the Royal Naval College at Osborne, for whom it is primarily intended, and for many others as well.

The Groundwork of English History. By M. E. Carter. xxiii+284 pp. (Clive.) 2*s.*—This is a manual not differing from others of the same kind. It begins with the Stone Age and ends with the death of Victoria. It has genealogical tables, five maps, and an index. It is not quite up to date in some points. The author seems (p. 52) to think that the kingdom of Sicily consisted only of the island in 1250. She says (p. 197) that Bavaria in 1740 received "money from France, and troops from Spain and Prussia," and that the war was closed (p. 190) in 1745 by the accession of Francis to the Imperial throne. But strangest of all is her statement (p. 218) that the boundaries of the United States were extended in 1783 by the cession of Louisiana.

Highroads of History. Book V. 288 pp. (Nelson.) 1*s.* 8*d.*—This book is written, like its predecessor, to accompany the pictures, and we must therefore not expect its history to be pedantically correct. It is pleasantly written, has a number of pictures, coloured and otherwise, some of them copies of famous paintings, some poetry, and a "summary of history, with dates." Its period is from 1485 to 1688.

Dramatic Scenes from History. By F. Johnson. xi+180 pp. (Arnold.) 1*s.* 6*d.*—Miss Johnson has so "selected and adapted" portions of Bede, Malory, Froissart, Roper, the Chronica Majora, and novelists of different kinds as to make fifteen dramatic scenes from various periods of English history, and thus give us a new kind of reading book. There are eight pictorial illustrations, and to each "scene" there is an introduction, which in some cases is used to warn the reader against being misled by the authors quoted. There are also brief notes. If it is possible to use the warnings, this book is a welcome variety in our school reading.

Geography.

A Simple Theodolite. Designed by W. Miller. (Garnethill, Glasgow: Nicolson.) 35*s.* net.—The distinctive feature of this instrument is that it preserves the principle of construction of the more complicated theodolites. There is thus nothing for the pupils to unlearn, and they are led by natural stages to the use of the real instrument. Mr. Miller's theodolite can be used for the construction of plans and maps, for the determination of heights and distances, for levelling and surveying, and for astronomical observations. It consists of a horizontal table carrying an accurately divided paper scale, graduated from 0° to 360°, attachable to a folding tripod stand. Centrally mounted on this table is a second smaller table of aluminium carried on a brass pillar. On the top of this, again, is mounted, by means of a rigid aluminium upright, an aluminium beam 15 inches long, carrying a pair of sights and capable of rotation about a horizontal axis. The elevation of this beam is measured by a vertically mounted silvered brass scale reading from 0° to 90°. There is also provision for horizontal adjustment and for taking the magnetic bearings of objects. Observations of azimuth and altitude can be made simultaneously. The instrument, after a very careful trial, has been found easy of adjustment and exceedingly accurate in results. It is claimed for it that it is correct to one-tenth of a degree. If the sights were provided with cross-lines probably this would be found correct, but even without these, in estimating a height of 32 feet, it was correct to a couple of inches. This simple theodolite should prove a valuable addition to the equipment of a geographical and science laboratory.

The Anglemeter. Invented by Dr. J. Erskine-Murray. (W. and J. George.) 2*s.* 9*d.*—This instrument is for measuring angles in practical surveying, geography, and mathematics. Its low price allows an entire class to be kept at work. The anglemeter is something like a simplified sextant. It depends on the same principles of reflection of light; hence the divisions numbered as degrees are really half-degrees. The mirror is fixed at the centre of the divided arc, and the pinhole is in the moving arm. It is much smaller than a sextant and in shape a quadrant. It can be put in a coat pocket without risk of damage, and may survive dropping on the floor. Design and workmanship are simple and effective. The instrument seems well suited for measuring the breadth of a river or the height of a tree, for road survey, for simple triangulation, and for offsets at 90°. The properties of mirror glass and of the human skull limit its usefulness to angles between 20° and 160°, an automatic reminder in favour of well-conditioned triangles. We cordially commend the anglemeter to all who are attempting to teach simple outdoor mapping. It seems more convenient than a prismatic compass; there is no oscillating card, and angles are read direct, and not by difference. For demonstration by the

teacher in the class-room the theodolite and plane table are perhaps easier to understand in principle. But for individual practical work, since one theodolite costs as much as a dozen plane tables, and one plane table as much as a dozen anglemeters, price evidently favours the anglemeter as the instrument for pupils' use.

Philips' Meteorological Calendar. (Philip.) 2*s.*—Here are fifty-two weekly sheets strung together so as to hang upon a wall. The leaves can turn over without being torn off. Barometer, rainfall, wind, and thermometer are to be shown by diagrams, not by figures. The necessary observations are much simpler than those at a normal climatological station. We commend these sheets to schools which are just beginning to keep weather records. Costing less than a halfpenny each, the sheets might also be used for exercises in plotting.

Mathematics.

Arnold's Effective Arithmetics. Books I.–VI. (Edward Arnold.) Books I.–V., 2*d.* each; Book VI., 3*d.*

The "A.L." Methodic Arithmetic. Books A, B, C, D, and Answers. By David Thomas. (Leeds: E. J. Arnold.) Books A, B, C, D, 3*d.* each; Answers, 9*d.*

Blackie's Adaptable Arithmetics. Book I. Simple Rules. 78 pp. Teacher's Handbook to above. viii+102 pp. (Blackie.) 4*d.* and 1*s.* respectively.

Pitman's Correlated Arithmetic. Books I., II. Also Book containing Answers, Mems., Oral Work, &c., to Book I. By T. W. Trought. (Pitman.) Books I., II., 3*d.* Answers, &c., 1*s.* net.

These books are all designed to meet the needs of the children in schools, and have been drawn up in view of departmental and other criticisms of the aims and methods of instruction in arithmetic; in the "Correlated Arithmetic" coloured diagrams are freely used. Considerable trouble has evidently been taken in every case to produce sensible text-books, and teachers may be left to decide how far the books are adapted to the circumstances of their pupils.

Examples in Practical Arithmetic. Compiled by J. L. Martin. iv+124 pp. (Murray.) Stiff paper cover, 6*d.*—This collection is based on Consterdine and Andrew's "Practical Arithmetic," and will prove a suitable companion to that work, which has distinct and valuable features of its own.

The Public School Modern Arithmetic Papers. Compiled by R. Wenlock. 16 pp.—These papers are compiled mainly from questions set in various public examinations; additional problems and some model solutions are also given. The book is published by the author, and is to be obtained at 4, Harbour Road, Barry, Glam., price 4*d.* or (with answers) 6*d.*

The Teaching of Arithmetic to Simple Proportion. By J. S. Norman. 39 pp. (London: The Year Book Press.) Paper covers, 1*s.* net.—This pamphlet contains a lecture delivered at the Conference of the Headmasters of Preparatory Schools in December, 1907. There is no claim made to originality, but the lecture has a certain interest as being the outcome of thirty years' experience in teaching young boys.

Cassell's Elementary Graphs. By V. M. Turnbull. x+53 pp. (Cassell.) 9*d.*—An excellent little book; text and examples alike are well fitted to give a sound yet simple introduction to graphical work.

Science and Technology.

Types of Floral Mechanism. By Dr. A. H. Church. Part i., Types I.–XII. (January to April). vii+211 pp.; with thirty-nine plates and numerous other figures. (Clarendon Press.) 21*s.* net.—There is probably no one in this country who has given more attention than Dr. Church to the arrangement and mode of origin of the lateral members of a plant shoot; so that a book by him containing "a selection of diagrams and descriptions of common flowers arranged as an introduction to the systematic study of angiosperms"—to quote the sub-title—commands the attention of serious students of botany. It must be said at once, however, that the work is not concerned with the perplexing problems of phyllotaxis, which Dr. Church has made peculiarly his own, but with types of floral structure in which the student and the lover of plants are alike interested. The present part includes floral studies, with beautiful coloured plates, of the Christmas rose, snowdrop, winter jasmine, blue garden crocus, mezereon, sweet violet, daffodil, early flowering heath, flowering currant, scarlet cydonia, and greater periwinkle. It is intended to include in the complete work what may be termed "the hundred best flowers"; and in the present collection the flowers described are representatives of spring types. All the flowers can be readily cultivated in a school garden, and thus made available for observation as parts of living plants as well as specimens for laboratory study, for which ample help and guidance are given. The scheme is an admirable one sumptuously carried out. It would be difficult to conceive a work more useful to the teacher, instructive to the student, or inspiring to the lover of Nature's handiwork as revealed in floral architecture observable with the unaided eye or with a magnifying power sufficient to show the tissues and general features of cells. In the school library and in the country house the work will truly be a thing of beauty and a joy to all who make use of it.

A Study of Splashes. By Prof. A. M. Worthington. xii+129 pp. (Longmans.) 6*s.* 6*d.* net.—For many years Prof. Worthington has devoted critical attention to the study of drops and splashes with the object of determining the exact character of the phenomena produced and of discovering the principles underlying their production. His early observations were concerned chiefly with the forms of splashes made by drops falling upon a solid plate, and the results were described in a book published in the Romance of Science series of the S.P.C.K. Much progress in the investigation has been made, however, since then; and the present volume is intended to interest general readers and young students in the marvellous effects obtained as well as to show how the simplest phenomenon provides a rich field for investigation. In a dark room a drop of liquid or a sphere was allowed to fall into a liquid, and the resulting effects were illuminated at different stages by means of an electric spark, the duration of which was less than three-millionths of a second. Photographs were thus obtained of drops and splashes at intervals of a thousandth of a second or so, and many of these remarkable pictures are reproduced in this volume to show the effects produced by high and low falls of the drop, rough and smooth spheres, and different liquids, both at the surface of the liquid and below. Surface tension and viscosity are, of course, two of the determining influences of the character of the effect produced when a drop or a sphere is allowed to fall into a liquid; and the difference between the splashes caused by smooth and rough spheres respectively has been proved to be due

to dust particles. The book will not only interest the student of physics and hydrodynamics, but will also be a source of inspiration and an illustration of what is really implied in a scientific method of study. The reader is taken into the laboratory and is told the story of the research point by point until the conclusion is reached. The narrative is easy to follow without special knowledge, and will be read with pleasure and profit both in school and out.

Pedagogy.

Herbert Spencer and Scientific Education. ix+119 pp. *Herbart and Education by Instruction.* x+142 pp. By Gabriel Compayré. Translated by Maria E. Findlay. (Harrap.) 2*s.* 6*d.* net each.—The brief memoirs which M. Compayré is preparing serve to enable a teacher, or student in training, to acquaint himself quickly with the more important contributions to educational theory of certain of the great pioneers in education. We are able to speak in the same terms of praise of these volumes as were used in the case of the books dealing with Rousseau and Pestalozzi. M. Compayré does not eulogise indiscriminately; he unerringly exposes serious omissions in Spencer's essay, and lays bare defects in Herbart's theories. The series of volumes is useful in accentuating the slow growth of educational theory and in emphasising the indebtedness of each educational writer to earnest workers who have preceded him. If writers on educational subjects realised more fully the value of the experimental method in education, and realised that theories based on the results of carefully planned experiments are more important than those of arm-chair philosophers ignorant of class-room conditions, we should make much more rapid progress towards the formulation of a science of education.

Monsieur le Principal. By Jean Viollis. 348 pp. (Paris: Calmann-Levy.) 3.50 francs.—M. Le Flos, principal of the collège de Guinette, appears to have had more than his share of troubles. The finances of his establishment were in a very bad way, his assistant-masters were more than ordinarily "difficult," the parents were unusually hard to please, and besides all these vexations M. Le Flos had a highly strung nervous system. The novel is no more cheerful, in fact, than the principal's life, to which eventually he puts an end. The book is useful in giving many glimpses of the everyday lives of French secondary-school masters, and many teachers may like to read it on that account, though if M. Le Flos's experience is typical, we do not envy the French principals of secondary schools.

Miscellaneous.

The Girls' School Year Book. April, 1908, to April, 1909. Issued under the direction of the editors of "The Public Schools Year Book." xxxii+576 pp. (Swan Sonnenschein.) 2*s.* 6*d.* net.—This useful book of reference has reached its third year of publication and is in many ways an improvement on previous issues. Detailed information is given this year of some 130 schools, and a comprehensive list of public secondary schools in the United Kingdom is also provided. The selection of schools for extended treatment is not always easy to follow. We miss several schools of at least equal importance to those described, and shall look forward to their inclusion next year. The second part of the book contains a valuable account of the careers open to girls on leaving school, and should prove of real assistance to parents. The book has become indispensable to all who have anything to do with girls' education.

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.*

Three "Wrinkles" in Algebra.

1. *To find graphically the sum of an arithmetical progression.*

Represent the n terms of the progression by a series of equidistant ordinates measured from a horizontal axis, and let AP and BQ be the first and last ordinates. The extremities of the ordinates will lie on a straight line PQ. Now turn the figure round so as to place Q and P respectively on the points previously occupied by P and Q, and let A′, B′ be the new positions of A and B. Then in the rectangular figure ABA′B′ we have n ordinates each equal to AP+BQ; hence twice the sum of the original progression is equal to n(AP+BQ), giving the ordinary formula $s=\frac{1}{2}n(a+l)$.

2*a*. *To verify graphically that a decreasing geometrical progression has a sum to infinity, and to find its value.*

On a straight line OX measure off OP_1, OP_2, OP_3, representing in length the successive terms of a geometrical progression the common ratio r of which is less than 1. Then $P_2P_1=(1-r)OP_1$, $P_3P_2=(1-r)OP_2$, $P_4P_3=(1-r)OP_3$, and so on; and generally the sum of any number of segments OP_1, OP_2, OP_3 is $1-r$ times the sum of the corresponding segments P_1P_2, P_2P_3, P_3P_4. But as the points of section approach O, the latter sum approaches the limit OP_1 (at least this appears evident from the figure, and the assumption that the points of section do not stop short of O by a finite distance will be granted). Therefore OP_1 is $(1-r)$ times the sum of the lengths OP_1, OP_2, OP_3 . . . continued indefinitely. Hence the progression *has* a sum to infinity, and this sum is $OP_1/(1-r)$.

2*b*. *To find graphically the sum of a finite geometrical progression.*

We suppose $r>1$; the case where $r<1$ can be readily supplied by the reader from the context. In the present case, if OP_1, OP_2, OP_3, &c., up to OP_n represent the terms, we have $P_1P_2=(r-1)OP_1$, $P_2P_3=(r-1)OP_2$, . . . and so on. If we measure off OP_{n+1} to represent the $(n+1)$th term, then $P_nP_{n+1}=(r-1)OP_n$. Hence P_1P_{n+1} is equal to $(r-1)$ times the sum of the progression OP_1, OP_2, OP_3 . . . OP_n, whence

$$s=\frac{OP_{n+1}-OP_1}{r-1}=\frac{(n+1)\text{th term}-1\text{st term}}{r-1}=\frac{ar^n-a}{r-1}.$$

3. *To solve any problem in elementary mensuration by the geometrical progression formula.*

Let us suppose the problem is to find the volume of a cone the height of which is h and the area of the base of which is A. Divide the cone into slices by planes the distances of which from the vertex form a geometrical progression with constant ratio r a little less than 1.

The areas of the sections, beginning with the base, are

$$A_1,\ r^2A_1,\ r^4A_1,\ r^6A\ \ldots$$

The heights of the slices are

$$(1-r)h,\ (r-r^2)h,\ (r^2-r^3)h,\ (r^3-r^4)h,\ \ldots$$

By summation of the slices, the volume of the cone is easily seen to lie between

$$(1-r)hA\{1+r^2+r^4+r^6+r^8+\text{——}\}$$

and

$$(1-r)hA\{r^2+r^5+r^8+r^{11}+\text{——}\}$$

that is, between

$$\frac{(1-r)hA}{1-r^3}\text{ and }\frac{(1-r)r^2hA}{1-r^3},$$

that is, between

$$\frac{hA}{1+r+r^2} \text{ and } \frac{r^2hA}{1+r+r^2}.$$

Whatever be the value of r, the former is greater and the latter less than $\frac{1}{3}hA$. Putting $r=1$ in the limit, we obtain for the volume the usual formula $\frac{1}{3}hA$. The same method can be applied to areas, centres of gravity, moments of inertia, and centres of pressure of any simple figures where the calculations by ordinary methods only involve integration of powers.

G. H. BRYAN.

Bangor.

The Mathematical Tripos and the Public Schools.

THE writer of a leading article in the *Morning Post* comments on the lack of success of the public schools in the mathematical tripos, and arrives at a conclusion which does not appear to be altogether just.

Referring to the fact that only one of the first ten competitors came from "one of the great endowed institutions which have appropriated the name of public schools," he says: "It shows that there exists to-day to an extent impossible twenty years ago a real circulation of ability throughout all social classes, and that the educational ladder is really placing the student of parts and of humble means in a position where he can compete for the highest university honours."

Now anyone who will take the trouble to study the tripos lists for the past thirty years will learn that success in the mathematical tripos has been the one academic distinction which has for many years been open to the student of ability and of humble means.

The reason is not far to seek, for the study of mathematics differs from that of every other subject in this, that the student of real ability and determination is practically independent of the teacher, provided that his early training (say to the age of sixteen) has been sound, that he has guidance as to the choice of books and access to the best books. This statement, which applies only to those capable of reaching the highest distinction, may appear to be dogmatic, but it is justified by the personal experience of many high wranglers.

So far, then, as the highest distinction in mathematics is concerned, all schools which provide a sound elementary training are on a fairly equal footing, and if any class of school has an advantage it is probably the small school, for here every boy of high ability will try for mathematical honours as being his one chance of distinction, whilst it is probable that the able boy of ample means has another career marked out for him.

Nor is it easy for the public school to pick boys of real mathematical ability from the private school. The candidates for entrance scholarships at public schools are necessarily very young, and although great pains are taken to set questions which discourage "cram," it is impossible to discount the advantage possessed by the well-taught boy of very moderate ability who probably comes from an expensive preparatory school.

Finally, the number of boys at the public schools is very small compared with the number at other schools.

If these facts were recognised, the *Morning Post* would not have been driven to the conclusion that the failure of public schools in this matter is due entirely to too close a clinging to "traditional methods" and to a loss of touch with "what is being done in the world of science."

Rugby. S. BARNARD.

The Value of Stories.

"IF we can teach children in the English lessons to love good stories—to love hearing them told and telling them—we have succeeded as teachers, even if they know little grammar and for the time being express themselves incorrectly when doing written work. Their future is safe—they will write pleasantly if they love good stories." I wrote this statement some time ago, and have since been wondering whether it is exaggerated or no.

Certainly in these days of free libraries and cheap publications the habit of story-telling is dying out except in schools where, if we will, we can keep it alive. It is the habit of numbers of readers to skim through hundreds of stories and yet never be able to tell one. What would such people have done if they had been riding with Chaucer to Canterbury or had been with Madam Philomena in Italy at the time of the plague, for on each occasion "the ladies and gentlemen allowed of the motion to spend the time in telling pleasant tales"?

Now we must be careful when we tell children stories that we make each one so vivid and real that the child will not forget it. We want the child to be and see where the scene of the story takes place—if it is a story of wild animals, to be in the woods with the greenness and scent of the woods around. The children should not leave school with a jumble of pleasant stories in their minds. To guard against this possibility we must:

(1) Not be anxious to tell the children too many stories or to let them read too many.

(2) Let the children frequently retell the story, and praise the most vivid version.

(3) Know and love the story ourselves, and think out *every detail* of it before we tell it. This is of the utmost importance. Learn it by heart if needful, but before telling it think over it for at least half an hour—see every character, dress them, and give their eyes and hair colour if the book omits these details. It is only by such careful thought and work that story-telling is valuable. Every story is more or less a failure unless we create an atmosphere for it.

(4) When the story is told, read any pieces of poetry that bear on the story, or any descriptions of places or people connected with the story.

There are two ways by which we may judge if our story has succeeded:

(1) If the children eagerly ask some days after to have it retold.

(2) If they go home and tell it to their parents and their parents appreciate it.

I think—but I want others' opinions—that the most valuable knowledge a child takes away from school is the knowledge of pleasant stories. These he will remember in after life, in old age, when facts and dates, rules and truths cease to interest. These pleasant stories will make life interesting and help to preserve the wonder and laughter of childhood even after many years.

But—to repeat—to cause our stories to be of value they must not only be excellent and pleasing in themselves, but told in such a vivid way that they will be remembered. We need not be dramatic to help the child to remember, but we can make use of his love of acting to assist his memory; for, as Stevenson truly says, "A child works all with lay figures and stage properties. When his story comes to fighting he must rise, get something by way of a sword, and have a set-to with a piece of furniture until he is out of breath. If his romance involves an accident upon a cliff, he must clamber in person about the chest of drawers and fall bodily upon the carpet before his imagination is satisfied."

RUBY K. POLKINGHORNE.

L.C.C. Stockwell Secondary School.

The Tercentenary of Milton.

The 9th of December next will be the 300th anniversary of the birth of Milton.

The council of the British Academy, feeling that the day should not be allowed to pass without due observance, have decided to organise a commemoration of the tercentenary.

They believe that they will be acting in accordance with common sentiment; and they are confirmed in this view by a letter which was recently addressed to them by the Lord Mayor, the chairman of the London County Council, the Vice-Chancellors of the Universities of Oxford, Cambridge, and London, the Master of Christ's College, Cambridge (Milton's college), the High Master of St. Paul's School (Milton's school), and Mr. H. A. Harben on behalf of the trustees of Milton's cottage at Chalfont St. Giles.

In this letter the signatories remark that "it might be felt that London, Milton's birthplace, so intimately associated with his life and work, should take the lead in promoting such a movement. But the event is one of national importance rather than of local interest, and its celebration should be entrusted to a representative body competent to ensure that it shall be carried out in a fitting and dignified manner."

The details of the programme of the celebration will be duly announced; but the special reason for addressing this letter to you at this early date is in order to commend the due observance of the tercentenary to the attention of the educational authorities of English-speaking countries. Those who are directly concerned in education will be best able to decide on the various ways in which this suggestion can be carried out.

E. Maunde Thompson.
(President of the British Academy.)

British Museum.

International Moral Education Congress.

We are requested by the executive committee of the International Moral Education Congress to direct the attention of your readers to the first International Moral Education Congress, which will be held in the University of London from September 25th to 29th next, and for which active preparations have been for some time in progress.

The general committee of the congress, under the presidency of M. Léon Bourgeois, late Premier of France, is constituted of more than 300 persons, representative of the educational thought of our time in the leading countries of the civilised world, more especially Austria, Belgium, France, Germany, Hungary, Italy, Japan, Scandinavia, Switzerland, and the United States of America. There are in no fewer than sixteen countries secretaries of considerable educational standing actively engaged in securing an adequate representation of their several countries at the congress. The executive committee, of which the chairman and vice-chairman are respectively Mrs. Sophie Bryant and Prof. J. W. Adamson, is composed of practical educationists representing the widest varieties of thought on educational matters. Finally, the congress has the great distinction of having received the good wishes of his Majesty the King, and of being under the patronage of the Ministers of Education for England, France, Italy, Spain, Belgium, and other countries.

The congress has an essentially practical object in view—that of improving the moral education offered in schools. To attain this object the organisers have appealed for support to educationists and to educational officials the world over. Almost all the educational leaders of Europe, without distinction of religion or party, and a large number of the highest educational officials in many countries, have responded to this appeal, and have welcomed the holding of the congress. The accession of these administrators is of special importance, since only the co-operation of Governments can ensure the realisation of the suggestion which may be expected from the conference.

This is the first of a proposed series of international congresses dealing with the problems of moral education. Accordingly, this congress restricts itself in the main to a general survey of school problems from a moral point of view. Matters of school organisation, of methods of training and teaching, of discipline, of direct and indirect moral instruction, of the relation of moral education to religious, intellectual, æsthetic, and physical education will be discussed; and everything is being done to get the ablest specialists to read papers, most of which will afterwards appear in the report, and should supply invaluable data for the furtherance of moral education all over the world.

It devolves upon our country to undertake the main organisation of this congress, and to be responsible for the greater part of the expenditure requisite for its success. We would accordingly appeal, with your permission, for the most generous encouragement your readers can bestow. On the extent of the financial support will partly depend how far the large intentions of the promoters of the congress can be realised, and it is, therefore, hoped that adequate response may be forthcoming.

Donations, which are urgently needed, may be sent to Messrs. Robarts, Lubbock, and Co., 15, Lombard Street, E.C.; to the hon. treasurer, Lord Avebury; or to the general secretary, Gustav Spiller, 13, Buckingham Street, Strand. Further information about the congress will be gladly supplied by the general secretary.

Avebury (*Hon. Treasurer*).

Vice-Presidents.

The Right Hon. Arthur Herbert Dyke Acland, P.C.; Sir William R. Anson, Bart., Warden of All Souls' College, Oxford; Sir Edward H. Busk, chairman of Convocation and past Vice-Chancellor of the University of London; Sir William J. Collins, Vice-Chancellor of the University of London; Sir James Donaldson, Principal of the University of St. Andrews; Lord E. G. Fitzmaurice, Under-Secretary of State; Dr. John Marshall Lang, Vice-Chancellor and Principal of Aberdeen University; Sir Oliver Lodge, Principal of the University of Birmingham; Sir Philip Magnus, M.P. for the University of London; Dr. T. F. Roberts, Vice-Chancellor of the University of Wales; Prof. Michael E. Sadler; Dr. Anthony Traill, Provost of Trinity College, Dublin.

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A TEACHERS' COUNCIL.

By the Rev. JAMES GOW, M.A., Litt.D.
Headmaster of St. Peter's College, Westminster.

THE Teachers' Registration Council, which after more than one remand, was condemned to death and executed last March, was created by an Order in Council of March, 1902. It included several members who did not belong to the teaching profession, and the rules under which it was required to keep the register of teachers were not of its own framing, but were furnished ready-made by the Consultative Committee of the Board of Education. I believe it is no secret that the Consultative Committee, knowing that elementary-school teachers were already registered by the Board, originally designed a new register in one column with a high academic qualification. After some time, however, it was pointed out by Mr. E. Gray (then M.P.), who represented the elementary-school teachers on the Committee, that, to satisfy the Act of 1899, the register must be a register of *all* teachers. It followed that, if all persons were to be admitted on the same terms, the only qualification would be of the standard of the Board's examination for certificates, or rather lower than London matriculation. It was apparent that teachers of high academic position would not care to register themselves on such terms, and a Column B was devised for the special benefit of secondary-school teachers.

This proved to be unsatisfactory to the elementary-school teachers, many of whom hold degrees; and, again, because women cannot get degrees at Oxford or Cambridge, and for many other reasons, the qualifications for Column B were so low and at the same time so complicated, that the persons whose claims were obvious had still no great desire to be registered, and the time of the Registration Council was mainly occupied with adjudication on special cases. How many these must have been may be guessed from the fact that, in spite of the coldness of the profession, the Council did in fact register some 11,000 teachers. This success was probably due in the main to the action of the Board of Education, which at one time inserted in all schemes for secondary schools a clause requiring that the headmaster should be registered in Column B, and at another time required that all secondary schools earning grants should have a certain proportion of registered teachers. But soon the Board cooled too, and decreed that the Teachers' Registration Council should expire in 1906. Mr. Birrell's Education Bill of that year contained a clause relieving the Board of "any obligation to frame, form, or keep a register of teachers"; but as this Bill failed to pass, the Council was continued in office until 1907. The clause just quoted was carried (with an addition to be presently mentioned) in 1907, and the Council ceased to exist in 1908.

When the Council was first threatened, it occurred to some prominent members of the teaching profession that the register, at any rate, ought not to be sacrificed, since the universities had gone to the expense of establishing training schools, and many teachers had made great sacrifices in order to qualify for registration. It was in their minds, too, that here was a good opportunity to establish a Teachers' Council which should have much the same obligations to the public and the profession as those which are undertaken by the Medical Council, the Inns of Court, and the Incorporated Law Society. With this view, a meeting was held in June, 1906, between representatives of the Headmasters' Conference, the Headmasters' Association, and the Headmistresses' Association. These representatives, in October of the same year, had a conference with the National Union of Teachers, and came to terms with them, both in regard to the treatment of Column B and also in regard to the due representation of elementary-school teachers on the proposed new Council. Meanwhile, the old Council was continued in office, and the contents of the next Education Bill were unknown, so the matter slept awhile. When, in Mr. McKenna's Bill of 1907, the old clause abolishing the obligation to keep a register reappeared, the same representatives, with Mr. Yoxall, M.P., representing the N.U.T., secured the introduction of additional words, of which the most important are: "Provided that it shall be lawful for his Majesty by Order in Council to constitute a Registration Council representative of the teaching profession." This clause, being regarded as uncontested, was passed as part of the Education (Administrative Provisions) Act, 1907.

It was now clear that the existing Registration Council would certainly expire in March,

1908, and it became necessary to present to the Board of Education a scheme for a new Council. A considerable time was spent in various negotiations not necessary to mention, but finally, on February 29th, 1908, a meeting was held, of which the following is the official minute:

PROPOSED TEACHERS' REGISTRATION COUNCIL.

Minute of Proceedings at the Meeting held at the College of Preceptors, February 29th, 1908.

There were present delegates from the following educational associations: Headmasters' Conference, Headmasters' Association,* Headmistresses' Association,* Assistant-masters' Association,* Assistant-mistresses' Association,* Preparatory Schools' Association,* College of Preceptors,* Private Schools' Association,* National Union of Teachers, Teachers' Guild, Association of Technical Institutions, Association of Teachers in Technical Institutions.

The associations marked * were represented by their delegates to the Federal Council. Canon Bell attended as chairman of the Federal Council.

Canon Swallow and Mrs. Bryant, D.Sc., attended by invitation and not as delegates.

The following resolution was accepted unanimously as a whole, each item in it having previously been put to the meeting as a separate resolution.

The Registration Council, representative of the teaching profession, as contemplated by the Education Act of 1907, should consist of the following members:

One representative each of the Headmasters' Conference, Incorporated Association of Headmasters, Headmistresses' Association, Incorporated Association of Assistant-masters, Assistant-mistresses' Association, College of Preceptors, Preparatory Schools' Association, Private Schools' Association, Teachers' Guild, Association of Teachers in Technical Institutions, and one principal to be nominated by the Association of Technical Institutions.

Five representatives of the National Union of Teachers (viz., one representing the Union as a whole, and four representing various classes of elementary teachers, namely, one headmasters, one headmistresses, one assistant-masters, and one assistant-mistresses).

Six members nominated by the Crown (who, it is prayed, should be persons experienced in teaching to represent the universities and of whom three should be women).

The Council as above constituted to have power to add to its number not more than three co-opted members.

This minute was agreed to by all the associations that sent delegates to the meeting, and was then (March 18th) forwarded by me, as chairman of the meeting, to Sir Robert Morant.

Being invited to bring a deputation, I collected nine of the delegates who had been present on February 29th and we were received by Sir R. Morant on May 13th. A discussion ensued on the questions:

(1) Would the proposed Council be really representative of the teaching profession? Ought not teachers of art, music, cookery, and other special subjects to be represented?

(2) If not, are they to be admitted to the register and on what terms?

The deputation was invited to send a deliberate answer to these questions, and did so on June 28th. The answers were in effect as follows:

(1) The teachers of special subjects fall into so many groups, and are so little organised, that they cannot be represented on the Council. The proposed Council divides the profession by parallel lines only into elementary, secondary, and technical divisions, and each of these again into heads and assistants, men and women. The allotment of places on the Council to these divisions is not mathematically accurate, but the meeting of February 29th regarded it as just. Sufficient provision was made for teachers not electively represented by leaving nine places in the Council to Crown nominees and co-opted members.

(2) It is not proposed to exclude teachers of art and other special subjects from the register. They would naturally be invited to offer their own terms of registration for the consideration of the Council.

This answer did not satisfy Sir R. Morant, who replied to it at great length. I need not summarise his two letters; for are they not set forth, with a great deal more, in the White Book on the "New Teachers' Registration Council," issued by the Board of Education on July 10th and to be had for 2½*d*. It may even be suggested, perhaps, that the White Book contains too much. Some members of the deputation think that what they said, in a casual discussion, ought not to have been used against them when they were, at the same time, asked to agree to a formal answer on the same questions. But we will let that pass.

The White Book makes it plain that the Board, or at least Sir R. Morant, is determined that there shall be no teachers' register other than that of certificated teachers kept by the Board, and no Teachers' Registration Council at all. The fact is not stated in so many words, but it is clear that the Board will not nominate a Council itself, and will not accept any proposals for a Council on which any and every group of teachers is not represented. The condition is impossible, and, even if it were possible and satisfied, yet the Board might still refuse to constitute the Council for some other reason. Obviously, it would not be convenient always if there were a strong Council able to speak to the public in the name of all teachers, and especially of those who have the highest academic qualifications. In my opinion, therefore, it would be a mere waste of time and trouble to attempt to meet the requirements of the Board. But I do not make this declaration with any sense of a grave defeat. On the contrary, I am disposed to think that the Board has, by a salutary check, diverted us into a better way. The late negotiations have brought together, in most friendly relations, all the principal teachers' societies, of whom many had never met each other before. A Teachers' Council can be constituted without official sanction, and will be much stronger in *personnel* if it is not burdened with the heavy task of keeping a register. The several societies can keep their own register and send their best members to the Council.

For the experience of the last six years seems to me to have shown that the general register itself is the real incubus, the real obstacle to an effective organisation of the profession of teaching. We have claimed the register and offered to fix a high qualification for registration mainly because we are anxious to undertake a duty to the public; but if the public will not give us this duty, there is no occasion to conceal the fact that it would be exceedingly onerous and dangerous, and we are not sorry to be rid of it. It is true that the command of a register might carry with it some strategical advantage, but for that purpose registration must be compulsory, and it is evident that compulsory registration is, in England, either impossible or exceedingly remote. The late Registration Council had sat nearly six years. It worked very hard; it had money and a competent staff; it started with a ready-made set of regulations; but it did not secure nearly all the teachers who were obviously eligible, nor did it succeed in making rules for the registration of specialist teachers, nor did it ever speak with authority in the name of the teaching profession. On the contrary, its work revealed differences and jealousies and difficulties which were not suspected before, and which no Council that should undertake the same task could wholly surmount. Specialist teachers, if they are to be registered, must be registered practically on their own terms. No Council is omniscient enough to check them effectively, and a Council which meddled too much would have too much work on its hands and would lose all its weightiest members.

The task of creating and keeping a register of all teachers is too heavy for a few men and women who have other business, and very exhausting business, on their hands. The work of the General Medical Council is trifling compared with this, and, if I am correctly informed, the members of that Council pay themselves a very handsome fee for attendance. But a General Educational Council which need not fritter away its energies on a register could, I think, command the services of all the best brains in the profession, and would exercise a powerful influence on public opinion. Nor is there any grave objection to distributing the register in the way that I suggest. The leaders of each branch of the teaching profession have a natural interest in fixing the standard of their own branch as high as they dare, and if the standards differ, so also do those of doctors and clergymen: indeed, the Medical Register and the Clergy List are really amalgams of many different registers, founded on a great variety of qualifications.

THE ENDOWED SCHOOLS (MASTERS) BILL.

THE pleadings, evidence, and judgments in the well-known case, Wright *v.* Zetland, brought to a head the long-discussed question of tenure of assistant-masters in secondary schools, and it became evident that legislative action was imperatively necessary in order to afford to such masters reasonable security in their posts.

Headmasters and assistant-masters were equally anxious to arrive at an equitable settlement of this question, which is of vital importance to the welfare of their schools, and fruitful negotiations took place between the two associations which represent most fully the headmasters and staffs of the secondary schools. These negotiations were marked by good feeling and moderation on both sides, and they were followed by careful discussion with the Board of Education.

The net result is the Bill introduced in the House of Lords by Lord Beauchamp on behalf of the Board of Education, which has now passed through the committee stage in that House.

It is a delicately adjusted compromise between the interests involved, and it is to be hoped that it will obtain the Royal signature as it stands. Any material change in the Bill would risk the whole structure, and might mean considerable postponement of much-needed reform.

The essential parts of this short measure are to be found in:

1 (1), ". . . any master in the school, by whomsoever appointed, and whether appointed before or after the passing of this Act, shall be deemed to be in the employment of the governing body for the time being of the school"; and in

1 (2), ". . . the dismissal of a master in an endowed school, whether appointed before or after the passing of this Act, shall not take effect except at the end of a school term, and except after at least two months' notice of dismissal has been given to him by or on behalf of the governing body of the school."

By 1 (1) an assistant-master becomes the servant of the school—the position for which he has long striven—not, as now, merely the private assistant of the headmaster; and, by 1 (2), reasonable notice of dismissal is substituted for dismissal "at pleasure."

These are real reforms. No doubt the majority of assistant-masters wish that the Board could see its way to include in the Bill provision for an independent court of appeal in scholastic cases, but it would be unwise to wreck the fortunes of the Bill by pressing for the inclusion of an appeal clause.

First Steps. The Students' Elementary Text-book of Esperanto. By Leslie P. Beresford. 30 pp. (International Language Publishing Association.) 2*d.*—In spite of M. Novicow and other hostile critics, Esperanto has come to stay. The simplicity of its grammar, resulting from Dr. Zamenhof's great linguistic knowledge and insight, should attract any student of language. This booklet lucidly states the facts of Esperanto grammar.

Stories from the History of Oxfordshire. By J. Irving. 96 pp. (Clarendon Press.) 1*s.*—A reader, apparently inspired by a recent pageant, containing many views and interesting matter concerning them. A good introduction to history for the children of the county.

THE COST OF EFFICIENT SECONDARY EDUCATION.

By R. E. Thwaites, M.A.
Wyggeston School, Leicester.

THERE appeared in the April number of The School World (p. 134) an article on "The Organisation of Secondary Schools," which raises issues of great importance for the future of education in this country. The writer's argument may be summarised for the purpose of this article as follows:

1. The educational necessity of provincial England at the present time is the provision of thoroughly efficient secondary schools of a high educational type.

2. Whilst such schools exist in some populous centres, they are not numerous, and local education authorities who have attempted to provide secondary schools favour a relatively inefficient type of school, with low fees. In support of this statement, it is pointed out that in publicly provided schools, statistics issued by the Board of Education show that more than one-half of the scholars have previously attended an elementary school, and that 80 per cent. of the pupils leave at their fifteenth birthday.

3. A secondary day school of a high type cannot be maintained for less than £16 per year per pupil for boys. In the present condition of national and local finance such schools cannot be worked if fees are less than £12 per year.

It is proposed in the course of this article to adduce further evidence, mainly of a statistical nature, in general support of the statements just quoted.

Need for secondary day schools of a high type.—The Board of Education Report for 1906 contains this passage:

> The object of first importance in this regard [the creation of new schools] at present is to establish a standard of quality rather than to hasten an increase of quantity. . . . Facts and figures show that when the quality is good the quantity will very largely take care of itself; while the provision in large quantity, of education of a low or unsuitable quality, would be an actual hindrance to the interests of education.

Prof. Sadler in his report on secondary education in Liverpool (1904) writes:

> A comparatively limited supply of thoroughly good secondary education, if made really accessible to gifted boys in all ranks of the community, would render far greater service to Liverpool than the provision of a much larger amount of teaching which lacked scholarly thoroughness and failed to furnish searching intellectual discipline. Quality rather than quantity is the wise aim in the reorganisation of secondary schools. The necessarily great expense of providing a really good secondary education points in the direction of concentrating effort upon a limited number of schools with a view to the firm establishment of a high intellectual standard in their work.

Again, page 138:

> There is some danger in England lest we should attempt to provide secondary education at a cost incompatible with real intellectual efficiency. Yet intellectual efficiency, combined with high personal character, is of vital importance in a system of secondary schools. Without it, they must fail in the very work which they are set to do, and the labour and expense of establishing them would be practically thrown away. A secondary school for boys capable of rendering to Liverpool the kind of service which may fairly be expected from the institute would be found to cost in the end (apart from interest on capital charges and from the cost of buildings) about £23 a year per boy in the school.

Broadly speaking, and having regard to the intellectual level of the work done, there are two grades of secondary education, each useful in its way, and differing greatly in cost. But secondary education of the lower grade is not in itself sufficient to supply the intellectual stimulus and training which are required by a great community.

In the table below are particulars derived from the report on the schools of the King Edward's Foundation, Birmingham, for the year 1904. Schools 1 and 2 are first-grade schools; the remainder are lower-grade secondary schools. None of the schools receive either local or State aid; the income is derived from fees and endowment. It will be understood that the figures are only approximate, but they serve to show the difference between the two grades of schools in cost of maintenance and some other respects.

King Edward's Schools, Birmingham.

School	School Age	Annual Fee	Expenditure per scholar	Average salary of staff (including principal)	Ratio of: Salaries to total expenditure	Ratio of: Fees to total income	Number of pupils per master or mistress
		£ s. d.	£ s. d.	£ s. d.			
1. King Edward VI. High School. Boys	8–19	15 0 0	30 0 0	345 0 0	0·63	0·27	13
2. King Edward VI. High School. Girls	8–19	12 0 0	16 8 0	175 10 0	0·62	0·20	17
3. Aston School. Boys	8–16½	4 10 0	11 8 0	180 12 0	0·61	0·19	25
4. ,, ,, Girls	,,	,,	9 10 0	90 0 0	0·57	0·24	17
5. Bath Row. Girls	,,	,,	9 10 0	86 0 0	0·56	0·22	15
6. Camp Hill. Boys	,,	,,	10 0 0	150 0 0	0·66	0·22	26
7. ,, ,, Girls	,,	,,	8 5 0	102 12 0	0·61	0·28	20
8. Summer Hills. Girls	,,	,,	9 16 0	84 0 0	0·54	0·24	16

Other First-grade Secondary Day Schools for Boys.

City of London School *	7–19	15 15 0	25 0 0	333 10 0	0·65	0·64	20–21
Norwich Grammar School †	9–19	16 10 0	29 9 8	—	—	—	17
Nottingham High School †§	8–19	12 12 0	23 0 9	—	—	—	20
St. Paul's School †	12–19	24 9 0	41 15 9	—	—	—	13
Bristol Grammar School †	9–19	12 0 0	24 16 11	—	—	—	18

* From Report in *Times*, April, 1908.
† From Liverpool Report by Prof. Sadler, 1904.
§ Cost of scholarships is not included.

For the sake of comparison, certain average figures relating to twenty lower-grade and secondary boys' schools provided by a single county council are appended. Expenditure per scholar varies between £10 16*s.* and £24—the average is £14 14*s.* Average salary of staff, including headmaster, calculated on a basis of one master to twenty boys, is £198. The ratio of salaries to total expenses averages 0·69. It is to be noted that most of these are small schools of fewer than one hundred scholars, and, therefore, more expensive per head than larger schools; this

is probably the reason of the high ratio of salaries to total expenses.

The supply of first-grade schools is insufficient.—The number of large day schools for boys, outside the London area, which do not receive grants from the Board of Education, can probably be counted on one hand; it is only necessary, then, to examine the list of schools recognised by the Board of Education to find what the supply of first-grade schools actually is. According to the latest available information—for 1905–6—the Board of Education then recognised as efficient 284 boys' and 148 dual or mixed schools. There were in these schools 60,353 pupils; of these 18,979 were below the age of twelve; 39,511 were less than sixteen years old, and only 1,863 boys were above that age. The official returns show that only 3,568 scholars remained up to their fifteenth year—*i.e.*, about 20 per cent. of those entering the secondary schools—and 11·5 per cent. stayed beyond their sixteenth year. The average annual fee charged in these schools is probably less than £8, and the annual expenditure per head not more than £13; eighty-eight schools charge a fee of £10 or more, and only fifty-one schools charge fees of £12 or more. In almost all cases it is usual to take boys under twelve years for a smaller fee. Most of the eighty-eight schools mentioned are endowed grammar schools, less than ten are under public management, and not more than two or three have been built by local authorities.

If we compare the number of pupils in Board of Education with those in "conference" schools—*i.e.*, public schools and large endowed day schools—we find in the latter nearly 30,000 boys (about 17,000 boarders, and 13,000 day boys). When it is remembered that almost all these boys remain at school up to the end of their sixteenth year, and a very large number for two or three years longer, it will be seen that nearly all schools supplying a first-rate secondary education are independent of local aid, and most of them of State grants also.

There are in England, leaving out London and neighbourhood, fifty-five towns or urban districts which had a population of more than 60,000 in 1906; in less than half of them are there boys' secondary schools with incomes which permit of the provision of a first-rate education.

Cost of maintenance for a first-grade secondary school for boys.—The writer of the article in THE SCHOOL WORLD quoted above says that such a school cannot be maintained for less than £16 per head; Prof. Sadler gives £23; the cost in Prussian high schools ranges from £17 10*s.* to £20; and the London County Council estimates it at £18. In the tables above some evidence has been adduced to show that the ratio of salaries to total expenditure cannot be much less than 0·6 or three-fifths, though in the case of small schools it may rise higher.

If we adopt the London County Council scale of salaries, *i.e.*, £150–£300, for assistant-masters—and it is certain that the type of man required cannot be obtained for less—the average salary for assistants will work out at £235. The ratio of masters to boys in first-grade schools is rarely less than one master to twenty boys.

Let us calculate on the above assumptions the cost of maintenance per head for a school of 300 boys.

Salaries:	
1 Headmaster...	£700
15 Assistant-masters	3,525
Total salaries	4,225

Taking £4,225 as 0·6 or 3/5 of total expenditure per annum, we get total expenditure per annum = £7,041; and maintenance cost for pupil per year = $\frac{7041}{300}$ = £23 5*s.* nearly.

In smaller schools the cost would tend to be rather greater, in larger ones somewhat less. The cost would be considerably less at first in new schools, but would rise with increment of salaries to the maximum of £23 eventually.

The relation between maintenance per head and fees is simple, when once the former is agreed upon. In the case of a new publicly provided school, without endowment, there are three possible sources of income: fees, State grants, and local aid. The State grant is £5 per head for all boys between twelve and eighteen years, but owing to various causes it would be unsafe to reckon on an average of more than £4. This grant is conditional on the provision of 25 per cent. of free places for children from elementary schools. Whether we take £23 or £16 as cost of maintenance, £19 or £12 per head respectively must be raised by fees and local aid. If the local authority refuses aid from the rates, then in order to cover the cost of the 25 per cent. free places, fees would have to be put at £25 6*s.* 8*d.*. or £16 respectively. The plain fact is that in schools spending £16 or more per head, the Government grant of £5 barely pays for the free places, and therefore, if fees are not to be prohibitive, the local authority must contribute a substantial grant in aid. It would probably be found that a fee of £15 could be charged, and if the local authority filled the 25 per cent. of free places mainly with the more promising of the boys intending to be pupil-teachers, the actual increase of expenditure on education would be considerably lessened.

The chief supporters of this type of school would be that large class of professional and business people with incomes ranging from £300 to £600 a year. From this class the majority of the leading citizens of the future must inevitably be drawn, and they will need for the adequate discharge of their duties a more generous educational equipment than their fathers could command. The ordinary secondary day school cannot give the requisite training, and the large boarding schools are too expensive. It should be possible for every county borough to support at least one first-grade school, well staffed and generously designed for the worthy education of those who will later be called to develop the industries and to direct the public services of their town.

The responsibilities of local authorities in the sphere of education are great and arduous; in many areas vast improvements have been made in the education of elementary-school teachers; large numbers of good elementary schools of lower grade have been opened; but in the provision of secondary education of a really high type little or nothing has been attempted. Are local authorities to continue to increase schools of the lower and cheaper grade, and to neglect the provision of the higher type of school, which alone can educate thoroughly the future leaders of the community? If so, the blunders which attended the technical education movement are in danger of being repeated in the field of secondary education.

TENSE-TRANSITION IN THE REFORM METHOD OF TEACHING A MODERN LANGUAGE.

By R. H. Pardoe, B.A.
Handsworth Grammar School.

WHILE the opponents of reform have brought accusations of all kinds against the "direct" method of teaching modern languages, they have not, as it seems to me, laid their finger on the really weak spot of the new method, viz., the totally inadequate attention devoted to the acquisition in ordered sequence of the various tenses.

After allowing a few weeks, or perhaps a term, for acquiring the present, the typical beginners' book quite casually introduces the other tenses, on no well-conceived plan, without systematic preparation, and with a woefully insufficient allowance of time for practising them. Thus, in his second term, the young pupil is already wrestling with past and future tenses, while by the end of his first year, probably, he has been taken through all the indicative tenses—including in French the past definite—and is presumably expected to be able to use them fluently in conversation. In one well-known German primer, which has otherwise a great deal to recommend it, all the tenses of the indicative and the conditional moods—including such compound forms as *ich würde gelernt haben*—are met with at the *second* lesson! This is, perhaps, an extreme case, but it illustrates the prevailing tendency.

The result of this undue haste to teach fresh tenses is in my experience a hopeless muddle and uncertainty. In French, for instance—to which language, for the sake of definiteness, my succeeding remarks will be confined—a question put in the past indefinite will as likely as not be answered in the present, the future will be confused with the conditional, and the past definite (preterite) treated as the imperfect.

No doubt this disposition to hurry young pupils right through the whole gamut of tenses in the first year of instruction is largely due to the desire to introduce them as soon as possible to literary French. Until our scholars are familiar with the preterite, it may be urged, they cannot understand French as usually written by French authors. In its widest acceptation, that contention is of course true. But by judicious selection and adaptation of the reading-matter, the pupil can quite conveniently be made familiar from the first with extracts, descriptions, short stories, &c., written in a good, correct style, even when there is restriction to a single tense; that is, it is possible for the French he reads to be from the very start good and correct. On the other hand, the dubious advantage of making acquaintance with literary extracts before acquiring the power to appreciate them will be more than compensated if, by a saner and sounder method of instruction, the pupil first gains familiarity with the various tenses in succession, postponing the study of the essentially literary forms of the language until that is accomplished. Naturally this implies slow progress, but the fact had better be faced that progress by any method must necessarily be slow in the early stages. "Slow and sure" should be the motto here, and the aim should be at soundness, and at readiness in using elementary constructions with a limited vocabulary, rather than at a wide but loose general acquaintance with the language.

What then is the saner and sounder method of procedure suggested? It is fairly well established now as a first principle that, in the initial and purely oral stage of instruction, pictures and objects should form the basis of the lesson, rather than reading-matter: the "reader" at this stage serves mainly as a guide to the written form of the words and phrases primarily acquired through ear and mouth. It is evident that the only tense to which this picture-work readily lends itself is the present. If it is possible to introduce other tenses, it is not natural, and further it is not necessary. Let the first year (in the case of children beginning French at about ten years of age) be occupied solely with the present tense and the imperative mood. No harm, of course, would be done by the occasional use orally of such forms as *j'ai fini*, *je vais ouvrir*, but they should not be studied systematically as yet. Let it be frankly admitted that the difficulty our pupils experience in learning and applying the present tense renders it unwise and short-sighted to burden them at this stage with others.

It is absolutely essential that the pupil should as early as possible acquire facility in answering and forming simple questions, and the restriction to one tense greatly accelerates this acquisition. A further reason for the restriction is that, in order to answer questions *naturally*, objective pronouns must be employed, and by confining the attention to one tense the work of mastering them is simplified greatly. Thus, by the end of the first year, the pupil is familiar with the present—including that of the commoner irregular verbs—in all its forms and with the simpler uses of the pronouns. He has command also of a small but

carefully chosen stock of words and phrases, and has now reached the stage in which the reading-piece will form the *basis* of instruction.

Before proceeding to discuss the teaching of the other tenses let me postulate that, as we are teaching French *orally*, we must be guided as to the order of their introduction by their use and relative importance in conversation. Hence the much-used past indefinite properly and naturally follows the present. With children who are accustomed to the use of the present in action-drill, this kind of exercise provides the readiest means of teaching, turn by turn, the other tenses. *E.g.: Je ferme le livre. Le livre est fermé. J'ai fermé le livre. Qu'est-ce que j'ai fermé?* &c. But the past indefinite with its three varieties is a very difficult tense to acquire, and the teacher need not be discouraged if the best part of a term is required to impart it thoroughly.

The future tense will follow, preceded as a stepping-stone by the quasi-future, *je vais* with the infinitive. This will take several weeks, but not so long as the past indefinite. Then comes the imperfect, which requires very careful handling. In the course of a few weeks the pupil will have a fair comprehension of its chief uses and be able to combine it with the past indefinite —*pendant que je travaillais, un ami est venu me voir,* &c.—thus preparing the way for what usually proves one of the chief stumbling-blocks in the way of young beginners—the distinction between the imperfect and the past *definite*.

The next tense to be taught will be the pluperfect, first alone, then in combination with the imperfect and the past indefinite. Then probably will come the conditional present, future perfect, and conditional perfect, though some teachers may prefer to postpone these until after the past definite. This, the tense of history and of literary style—almost entirely excluded from ordinary conversation—is naturally reserved until last. It is most conveniently taught by substituting it for the past indefinite in reading-pieces already known.

The pupil should now be capable of undertaking the study of any prose work of moderate difficulty, the various uses of the subjunctive mood being best dealt with as they occur, though here too much may be done to lighten difficulties by systematic conversational training.

The course of instruction outlined above will require—subsequently to the initial stage, in which the present tense only is used—from one to one and a half years. By the time the average pupil can use the past definite *readily*, he will therefore be from thirteen to fourteen years of age, on the assumption that he begins French at the age of ten to eleven. This may seem to many a tardy introduction to the full literary style of French: but is not the postponement well worth while, if the pupil thereby gains immeasurably increased power to grapple with and appreciate French literature, while attaining in addition considerable conversational fluency?

AN EXPERIMENT IN RURAL SECONDARY EDUCATION.

By WILLIAM ALDRIDGE, B.A., B.Sc.
Headmaster of the Grammar School, Shepton Mallet.

FOR some ten years past I have been conducting an experiment here with the object of finding a practical solution to the problem as to how far it is possible to link the education given in a local grammar school with its rural environment, without destroying its usefulness as a school of general culture and turning it into a mere technical institution for the instruction of farmers.

The problem is a complicated one, for while in a rural district the chief occupation is undoubtedly farming, yet many pupils demand a general training such as will fit them for professional or commercial life, while others will be attracted to engineering and the like.

My first idea was that the school should have an "agricultural side," but this was soon given up as a failure. I think an agricultural side in a small rural secondary school is bound to be a failure. First, because pupils enough will not be found to take advantage of it, since farmers rarely wish their sons to become farmers, though the majority of them drift on to the farms when they leave school. Hence they are not entered on the agricultural side, and the very boys one wishes more particularly to influence are just those who are not reached. Secondly, because of the expense involved—an extra staff of specially qualified masters is needed for a very few pupils, and a rural school has seldom any funds to spare.

My next step was to give the whole curriculum an agricultural bias, and this idea has been gradually developed until a stable system has been arrived at which might readily be adapted to all rural schools. The main principles on which this system is founded are: that the education must be general as fitting boys for any career; that it must touch rural life at as many points as possible and foster a liking for country life; it must furnish those who will remain on the land with a scientific foundation for their after career and give them a clear insight into the principles underlying the ordinary operations of the garden and the farm, fitting them to be leaders of industry by giving them wide, general culture and quickened intelligence; but it must avoid attempts to teach the mere technicalities of agricultural practice. These can only be learned on a farm and must be left for others to teach. How these principles are applied can best be shown by giving some details of how our scheme is worked in the various forms.

Our Lower School includes Forms I. and II., in which the ages vary from eight to twelve or thirteen years. No system of education can be satisfactorily built up, save on the secure foundation of a sound knowledge of the use of the mother tongue, and both here and throughout the school special attention is paid to this, every

lesson being made to subserve this purpose by endeavouring to obtain to every question asked answers duly framed as complete sentences in good English. The literature for reading and recitation is mainly connected with country life. For teaching the rudiments of composition in these forms we have used the stereoscope for upwards of eight years, and have found it of immense assistance. During the last few years we have been able to obtain nature-study stereographs, admirably suited to our purpose, issued by *The Country-Side*. First-hand observations are also made of animal- and plant-life; their interdependence and their connection with farming or gardening are noted, and the results provide exercises in composition. Boys often bring specimens to school, or they are taken for rambles to observe Nature in her own home, while interesting objects, mainly local, are preserved in a large museum case which occupies one side of the classroom. History and geography are connected as much as possible with the locality.

The elementary science consists of talks about actual specimens, *e.g.*, of plants or animals useful or otherwise to agriculturalists and horticulturalists, or of demonstrations of scientific experiments, chiefly chemical, worked by the master, and utilised as the basis of observation, conversation, and the development of the reasoning faculties.

In arithmetic, we teach decimals immediately after, and as an extension of, the simple rules, we omit all weights and measures not in ordinary use, and work mainly with sums in problem form and with small numbers.

In freehand drawing use is made of plant and animal forms to teach the principles of design, and drawing to scale is also taught. These, with physical drill and religious knowledge, which are also taken throughout the school, complete the curriculum of this section.

In the Middle School (Forms III. and IV., ages twelve to fifteen) the English subjects and freehand drawing are developed along the lines laid down in the Lower School, and drawing to scale blossoms into plans, elevations, and isometric views of models, which are afterwards made in the workshop from the drawings. This woodwork course extends over two years, and aims at teaching the various joints used in the carpentry of the garden and the farm.

In Form III. a beginning is made with French, which is taught mainly on the modern conversational method, wall pictures being used, and the garden, the farm, and the country-side supply materials for the lessons. Grammar is systematically taught and a simple narrative is usually reached by the third term. Latin is not a compulsory subject, and is taken by very few.

In mathematics, algebra and geometry are begun. The former is treated in such a way that simple equations are reached at the earliest possible moment, after which they are made use of in solving problems in arithmetic and mensuration whenever their use simplifies matters. Geometry is treated on the modern plan, and is correlated with geometrical drawing. Mensuration is made a speciality, and is begun as soon as the knowledge of algebra and geometry is sufficiently advanced, usually about the middle of the second term. Each rule is verified in the physical laboratory before being made the basis of practical exercises in the class-room. Tables of logarithms are introduced in Form IV. to aid in rapidity of calculation. In this section also book-keeping, suitable for a small trader or farmer, is begun, and the lessons are made progressive throughout the rest of the school.

It is in the science course where the rural bias is most prominent. This includes portions of chemistry, physics, botany, rural economy and agricultural science, in all of which practical work is at the foundation. We follow no set textbooks, but all branches are made to bear upon rural economy and country-life. A syllabus for chemistry and physics, somewhat similar to the one at which we have arrived, has lately been included as Subject XXVI. among the science syllabuses issued by the Board of Education, while our botany is treated much as is there shown under Stage I. of Subject XXIV. One special lesson per week is devoted to the correlation of these matters and their application to horticultural and agricultural practice.

A few examples of our method of treating these subjects must suffice. In chemistry, illustrations of chemical action are drawn from the soil or from plant-life rather than from manufacturing processes; *e.g.*, oxidation by the action of lime; heat, ammonia, &c., produced by chemical reaction in a heap of rotting vegetable matter. A lesson on solution will be followed by passing distilled water through garden soil and showing that it dissolves matter on its journey; *e.g.*, nitrates shown by the diphenylamine test. A further demonstration of osmosis follows in the physical laboratory, and these will be correlated with a lesson in botany on the structure of a root to show how plants take in food from the soil. The ordinary demonstration of the production of calcium carbonate by blowing into lime-water, and the clearing of the turbid liquid on the formation of the bicarbonate by the continued passage of carbon dioxide, followed by the re-formation of the carbonate on heating or on evaporation, is applied to show why it is necessary to lime a soil at intervals, even though it overlies limestone rock, why lime-pans are formed in soils, why spring-water differs from rain-water, why limestone caves are formed in the Mendip Hills, why those caves are full of stalactites and stalagmites, and so on. A lesson on neutralisation will be followed by showing how this is applied as a test of the requisite acidity in cheese-making, and how the application of lime corrects the "sourness" of soils. A lesson on the charring of organic bodies by strong sulphuric acid and the solvent action of certain organic liquids on fat is applied to the testing of milk for butter-fat, and the attraction of sulphuric acid for moisture to

finding the percentage of water in a sample of butter.

In physics the use of the hydrometer to assist in determining variations in the composition of milk or cider is demonstrated. Levers lead through the common steelyard to the ordinary weighing machine. Friction and the action of various substances in reducing it are studied in relation to farm implements and machinery. Capillarity and its connection with maintaining the moisture of a soil are demonstrated. In a hundred such ways the facts of chemistry and physics are connected with the daily surroundings of the pupils, and thus these subjects are given a greatly enhanced interest and usefulness.

In botany the physiological side of the subject is elaborated, and the details of structure and classification kept more in the background. Physiological experiments are being worked in the laboratories or on the demonstration plots outside all the year round. In the Middle School the pocket-lens only is used, but the use of the compound microscope is taught in the Upper School. The action of enzymes and bacteria is gone into carefully, and the results of it shown in relation to nitrification of soils, digestion, putrefaction, ripening of cream and cheese, rancidity, the souring of milk, &c., and this leads on to the use of preservatives, of pasteurisation, and sterilisation.

But this is carrying us on into the work of the Upper School (Forms V. and VI., ages fourteen to eighteen), where the studies are more advanced; yet even here text-books, though used, are not systematically followed. Chemical analysis takes the form of testing soils, manures, feeding-stuffs, milk, butter, cheese, &c.; the systematic study of metals and metallurgical processes is replaced by the elements of organic chemistry to enable the chemistry of everyday life and such processes as the production and transference of food materials in plants to be understood. In physics, heat, light, and the elements of magnetism and electricity are studied in connection with the soil, plant-life, animal-life, and ordinary electromagnetic machinery, such as motors, electric-bells, and telephones. The various transformations of energy into heat, light, sound, motion, work, electricity, &c., engage our attention in similar connection. Radiation, absorption, and evaporation are studied in relation to their effects on the temperature of soils and on the plants growing on them. Pupils find the specific heats of sand and clay, and specially note the parts played by specific and latent heats in the economy of nature. In short, it is the method of treatment rather than the subjects studied which differentiates our scheme from others.

Botany is developed always along agricultural lines, and practical lessons given in skilled processes, such as hybridisation, grafting, budding, and spraying for the prevention or eradication of fungoid diseases. In the rural economy lessons the chemistry of soils and manures is studied, and the relation of both to plant-life clearly traced. Some of the leaflets of the Board of Agriculture are read and discussed to get a grip on the method of dealing with practical problems of rural life.

As regards mathematics, the rules of arithmetic and mensuration have usually been completed before the Upper School is reached, and attention is mainly concentrated on algebra, geometry, and trigonometry. The mensuration and trigonometry are developed into practical land-surveying, which is taken instead of woodwork. For this we have chain, arrows, cross-staff, &c., a dumpy-level and levelling-staff, and a theodolite, and these are used in turn until the boys are competent to measure an ordinary field, to take a series of levels for laying a drain (say), and to measure heights and distances by means of the theodolite. Here the playing-field usually serves for our class-room. Practice is also obtained in applying the mensuration to the measurement of stacks, timber, brickwork, and the like.

Our special equipment includes demonstration and experimental plots, a botanical garden, meteorological station, and garden plots for the boys, together with cases showing actual specimens of crops grown on the plots in past years; specimens of all ordinary kinds of farm and garden seeds, chemical manures, spraying powders, insect pests preserved in spirit; specimens of agricultural plants and weeds, pressed, mounted with a description of each, framed and hung round the class-rooms; cases showing specimen bunches of good and bad pasture grasses; numerous diagrams, &c.

The plots include three series of ten plots each, side by side, for demonstrating the effects of different manures, singly or in combination, on different classes of crops. The results obtained on the various plots in a series, and on the corresponding plots in the three series, are periodically noted and discussed with the different forms. The boys weigh out and apply the chemical manures, drill seeds, hoe, and do other light work, but they are not required to do the heavy manual labour such as digging or mowing. As each crop is ready it is weighed, and as an exercise in mathematics the produce of each plot is calculated to tons or hundredweights per acre, so that the boys who have observed each plot during its growth may have a practical idea of the value of a growing crop. The tabulated results are plotted out on curve paper, and the curves obtained year by year are compared and discussed. Various plant diseases and pests are noted from time to time and remedial or preventive measures noted.

Manurial experiments are also worked on flowers and vegetables, and specimen plots of the different grasses and farm plants are grown as illustrations of class-room lessons. From time to time experiments are worked on the effect of season as shown by sowing seeds once a month all the year round, on thick and thin seeding, deep and shallow sowing, on the influence of big and little seeds, or big and little "sets" in

potatoes, and so on. The headmaster's garden, adjoining the plots, is pressed into service for demonstrations; *e.g.*, planting, spraying, pruning, grafting, budding, and management of fruit-trees; potato spraying; the making and use of a hot-bed; the effect of bacterial cultures on plants; various methods of cultivation, &c.

The county instructors in agriculture and horticulture periodically give special courses of lectures and practical demonstrations. Should the itinerant county cheese or butter school happen to be held within a reasonable distance, the upper boys are admitted to the demonstrations. Visits are paid to important agricultural shows under the guidance of these experts.

Besides the ordinary instruments, our meteorological station includes soil thermometers plunged 9 in. below the surface, and our daily records now cover eight years, so that we are able to discuss results in connection with averages and former seasons.

Our most recent addition consists of indoor and outdoor miniature ranges for B.S.A. air-rifles, and all the boys of the Middle and Upper Schools are taught to shoot.

In conclusion, I may add that my experience shows that a curriculum, treated in the way I have sketched, appeals much more forcibly to boys in the country than that run on the ordinary lines, that it arouses their interest and enthusiasm, and makes many of them real lovers of nature. The Board of Education is anxious to bring the instruction given in the rural elementary schools more into touch with their surroundings, and the difficulty met with consists largely in finding teachers competent to undertake the task. Since the foundation of the education of the elementary-school teachers of the future is now being laid mainly in secondary schools, a modification of the curriculum in the direction indicated would seem to be imperative in many of the rural schools if the next generation of teachers is to be equipped properly for its work and the Board's difficulty surmounted. Some such scheme applied more generally to rural secondary schools and followed up in the training colleges would in turn react upon our rural elementary education and go far towards solving the problem of "back to the land," and making the new system of small holdings into the success which the Government desires.

The "Beaumont" Language Lessons. By T. Holding. Bks. i.–vi. (Charles and Dible.) 2*d.* each.—These little books are intended for the first six standards of primary schools; they seem to us to be suited excellently to the youngest boys in preparatory schools—especially if each book is taken as a term's rather than a year's work. The gradation is well done, and passes from the entire omission of grammatical terms in book i. to simple and sufficient definitions and explanations of functions in book vi. It is evidently intended that in the later stages the reading-book will supplement and illustrate the codification of the grammar.

THE MILTON TERCENTENARY AT CAMBRIDGE.

By Fanny Johnson,
Formerly Headmistress of Bolton High School.

On July 10th, at the New Theatre, Cambridge, the Master and Fellows of Christ's College celebrated the memory of their greatest alumnus (John Milton, born December 9th, 1608) by an invitation performance of the mask of "Comus." Probably few readers of Milton's poetry realise that for seven of the best years of his life he was engaged in a task that could hardly have been congenial, namely, in keeping what at later times was called a "private academy for the instruction of young gentlemen." At the age of thirty-one (1639), when a man conscious of high ability is usually most intent upon egoistic pursuits, Milton voluntarily took upon himself the charge of two little nephews, John and Edward Phillips, and hereafter acted towards them as a father, stern, no doubt, but dutiful, and probably even in his way affectionate. To these boys were added in course of time other day-pupils, and even a few boarders, so that the teacher had to remove into larger premises to accommodate the increasing numbers. The sacrifice that the poet made to family affection was surely one of the noblest deeds of his life. It proves the strength of that Puritanism which is so often defamed, but to which Milton's whole life and works bear witness. He puts foremost in the aims of the educator that his pupils should be "enflamed with . . . the admiration of Vertue," or "instruct[ed] . . . amply in the knowledge of Vertue and the hatred of Vice"; just as he had said years before in "Comus":

> Love Virtue, she alone is free,
> . . . Or if Virtue feeble were
> Heaven itself would stoop to her.

And with him these were no mere phrases. "Virtue" was the mistress and passion of his life.

Like all large minds, Milton touched nothing that he did not make his own. His "Tractate on Education" above quoted not only contains many suggestive hints for modern pedagogues, but even represents to a considerable extent his own successful practice. In fact, it is one more example of the essential practicality of the poetic mind. When it was written (1644) he had been already engaged in teaching for some years. He aimed high, in practice as in theory. His idea of what—in favouring circumstances—could be achieved by a perfect system was based upon experience. Both the nephews, in fact, turned out unusually learned, though not of the most promising original stuff. Edward gives a list of their acquirements, which would make many a modern schoolboy blush, while he laments that they had not profited to so full an extent as they might from their distinguished instructor. Moreover, the fact that other noblemen and gentlemen begged the schoolmaster to take charge also of their sons speaks not only for his reputation for learning,

but also for his proved power of instruction. The Tractate sets forth a lofty ideal, which was, of course, scarcely applicable to the small institution in which Milton, so far as we know, was sole professor. The method of language-teaching therein detailed was doubtless, however, to a considerable extent carried out.

Their speech is to be fashioned to a distinct and clear pronunciation [of Latin], as near as may be to the Italian, especially in the Vowels. For we Englishmen being far Northerly, do not open our mouths in the cold air, wide enough to grace a Southern Tongue; but are observed by all other Nations to speak exceeding close and inward: So that to smatter Latine with an English mouth, is as ill a hearing as Law-French.

Modern teachers of language have only recently in England begun to lay stress upon *speech* rather than "pure trifling at grammar," and in but few instances is this applied to the Latin tongue. In another and still more radical respect Milton forestalls modern methods:

Next to make them expert in the usefullest points of Grammar, and withall to season them, and win them early to the love of vertue and true labour, ere any flattering seducement, or vain principle seise them wandering, some *easie and delightful Book of Education* [*i.e.*, instructive book] *would be read to them.*

The italics in this and the following passages are mine. And again:

Then also in course *might be read to them out of some not tedious Writer* the Institution of Physic, &c., &c.

Lastly:

When all these employments are well conquered, then will the choice Histories, Heroic poems, and Attic Tragedies of stateliest and most regal argument, . . . offer themselves; which if they were not only read; but *some of them got by memory, and solemnly pronounced with right accent, and grace, as might be taught*, would endue them even with the spirit and vigor of Demosthenes or Cicero, Euripides or Sophocles.

Thus Milton insists on the teaching of language as though it were a living thing, a means for the exchange of thought and the expression of emotion, not an ingenious puzzle or peg for grammatical rules. Space fails me to dwell upon his recommendation that the pupils should—

recreat[e] and compos[e] their travailed spirits with the solemn . . . harmonies of Musick heard or learnt; either while the skilful Organist plies his grave and fancied descant, in lofty fugues, . . . sometimes the Lute, or soft Organ stop waiting on elegant voices either to Religious, martial or civil Ditties; which *if wise men and Prophets be not extreamly out, have a great power over dispositions and manners.*

In short, Milton, the Puritan, as has often been pointed out, was an ardent lover of all the arts, and not only so, but as a schoolmaster maintained the beneficent influence of music upon morals. Herein he only imitated Plato, but he is before the present generation. For though we study music nowadays, it is seldom that a modern schoolmaster would venture to urge the plea of instigation to virtue as an excuse for devoting more time to the arts. Indeed, the kind of music that is in vogue in many schools would scarcely come under Milton's category of virtue-forming stuff.

The performance of "Comus" at Cambridge was a notable exemplification of these principles of education. The players were amateurs, and their anonymity was carefully preserved, yet as much pains had been taken with every detail as though professional reputation were at stake. Newnham students were for once permitted to display their talents in company with undergraduates, and if ever such a "mixed" performance were advisable, this was assuredly the moment. It seemed passing strange to think, as we listened to the melodious verse declaimed, for the most part, with as fine an intonation and accent as would have satisfied the fastidious ear of the author himself, that this noble Morality Play was written in the first instance as a mere casual accompaniment to scenic and musical effects, the delight of the mask-loving Carolean age. The scenes were a feast of beauty to the eye, decoration and costumes being harmoniously designed in the symbolic spirit of the poem. Comus himself was presented as a sort of Mephistopheles rather than the Bacchic god whom Milton seems to have intended. The actor's conception was clever and consistent, but the play demands something of Hellenic dignity rather than the gestures and tricks of the modern stage. And yet—who can say that the unknown player, "some handsome gentleman among the connexions of the Bridgewater family" (as Mr. Masson conjectures), who "created" at Ludlow Castle "the part of the disreputable Riot-god," did not indulge—as amateurs will—in extravagant facial expression and elaborate gesture? There lives no record of any comment, nor can we even guess whether the poet were present to superintend this glorious "first night." Even Lawes, the musician who took the part of the Attendant Spirit, seems hardly to have been aware that he was introducing to the public a great new poet. His music, played on strings, was used for the most part at Cambridge. The more serious side of the mask, as well as its lighter features, came out perhaps even more successfully than we may conjecture to have been the case at Ludlow. The evil nature of Comus and his crew was effectively suggested by their brilliant orange and flame-coloured costumes and their uncanny "creepy" dance in the forest. The dark Comus, with a glittering green circlet on his head and a leopard-skin thrown over him, contrasted well in appearance with the heaven-blue and white of the Attendant Spirit. The Lady was a dignified figure with beautiful enunciation, and the two brothers did excellently. The dances had also been excellently rehearsed. In short, it was abundantly evident that though Milton could never have been a playwright *par excellence*, he had at least one important faculty for dramatic writing, namely, a sense of the *varied* effects that are necessary in order to produce an attractive stage unity.

If "Comus" is examined in detail, we observe a careful and yet spontaneous management of emotional crises. The skeleton was possibly furnished by Lawes, and the poet had perhaps to write "up to" the three prescribed scenes: the wood, the palace, and the transformation to Ludlow Castle. But within the form set him his genius moves easily. Of his mask, as of the sonnets, it may be said:

> He blew
> Soul-animating strains, alas! too few.

To quote again from the Tractate, a play like this should "make [us] soon perceive what despicable creatures our common Rimers and Play-writers be, and shew [us] what religious, what glorious and magnificent use might be made of Poetry." "Comus" was presented at Ludlow Castle in 1634, and was first published anonymously in 1637. It has been performed from time to time on the theatre stage; *e.g.*, at Drury Lane in 1738, with musical accompaniments by Dr. Arne. It was revived notably by Macready, and not many years ago it was played as a Pastoral by the Mermaid Society in the Botanic Gardens, London. It was contemplated at first to give the Cambridge performance in the garden of Christ's College, which would have had a peculiar significance. But the long speeches are, after all, not well adapted for the open air. And perhaps the theatre brought us as near as was possible to the flavour of the original, which was, of course, performed withindoors.

When the Tractate was written, "Comus" was still Milton's chief title to poetic fame. It was printed with other minor poems for the first time under the author's name in the following year (1645). Probably the author did not attach the value to his mask that we now assign to it. But the idea of dramatic writing remained with him to the end.

An interesting loan collection of Milton portraits, manuscripts, editions, &c., was on view at Christ's College for some time during the May term, to which was added, for July 10th only, the precious MS. belonging to Trinity College, which contains the first rough draft of "Paradise Lost" in the form of a drama. A drama, "Samson Agonistes," was of course Milton's latest work. "Comus" was repeated publicly on July 11th, when the various schools of the town, whose benefit the promoters had peculiarly in view, were able to perceive "what religious, what glorious and magnificent use might be made of poetry."

Lessing, Selected Fables. Edited by C. Heath. 46 pp. (Blackie.) 6*d*.—The language of Lessing's fables is a little old-fashioned and hardly simple enough for beginners. For pupils who have made some progress they make good reading, and this edition may on that account be welcomed, as the notes are adequate. A few slips we have observed: *Isegrim* is the name of the wolf in the beast-epic, not in the fable (p. 37); *verrätisch* should be *verräterisch* (p. 38); *wenn anders* does not mean "if on the other hand," but "if indeed" (p. 41).

THE EDUCATION OF GIRLS.[1]

By Mrs. Woodhouse,
Headmistress of Clapham High School.

THERE is much current criticism of the education we give in our girls' schools, and many doubts whether it fulfils its function of "preparation for complete living."

The standard of attainment for the average girl who leaves school short of the sixth form can scarcely be said to have risen appreciably in the last ten to fifteen years, and in the future we may have to content ourselves with an even lower standard in "bookish" attainment. The increasing disappearance of the line of demarcation between primary and secondary education, though by no means to be regretted, is one factor which will tend to this result in all our public schools. All scholars cannot conform to equal standards; both examiners and inspectors must realise this, and already we have evidence of the relaxation of rigid tests. But this somewhat lower standard of attainment reached by the average girl (leaving on one side those whose complete school course has been followed by university and professional training) need not distress us unduly if we feel that we are giving her something of equal value. Not knowledge as such, but "virtuous action as the end of all earthly learning," is the ultimate test of a sound education. I do not wish to undervalue knowledge, but simply to urge the well-known truth that true education does not necessarily and universally imply scholarship—that it is not the amount known, but the use made of it, that gives such knowledge as is imparted its vital power. Knowledge that is theoretical only is but half knowledge; it is not complete until it is related to human experience and life's duties.

What, then, are our girls' schools doing to render their pupils capable of taking their place, of fulfilling their social and civic function in the world? and what is really the best preparation for a life of such activity? Are we to study politics instead of history? Are we to cut ourselves off from the great impersonal world of science, from the whole realm of imaginative literature and art, because they may seem remote from our aim? Are we to teach nothing but those subjects whose bearing on practical problems of domestic and wage-earning skill is most obvious? *No!* Do not let us be utilitarian even for the sake of being practical. The best preparation for such an end as we have before us lies in no premature precocity, in no undue emphasis upon conditions for which the child is not yet ready; we recognise the wisdom of leading children to knowledge of their immediate surroundings, of the external environment, before the social *milieu* is strongly emphasised.

Lower School Curriculum.—The needs of childhood are best met by a simple curriculum. It is satisfactory to see that in the annual conference of the Association of Assistant-mistresses, their resolutions on the curriculum of the lower school

[1] Extracts from the presidential address at the Conference of Headmistresses at Manchester, June, 1908.

recognise the unity underlying the different subjects, and that the needs of childhood are met by three main branches of instruction, viz., (1) subjects leading to development of physical power, of manual dexterity, and constructional skill; (2) English, that may include the daily psalm ("in which no contradiction will be found in the union of old and new"), the story, legend, poetry—the English child's goodly heritage of our glorious literature; (3) nature-study, that shall contribute to the child's "sense of wonder and novelty in the appearances of everyday truths—of all others the most awful and mysterious"—and that shall include the outlook of the poets as well as of the man of science. For through contact with Nature we look for a spirit of reverence and simplicity, for the quickening of spiritual insight. We see in both work and play, suited to the child's instincts and capacities, the surest means to that happiness—something greater than mere pleasure—which is one of the best gifts we can help our children to gain. Is it visionary to hope that such a curriculum for school children from seven to twelve shall be offered to all? Seeing that physical care and training for all children in elementary schools has already been provided for, can we not look forward to a still further correspondence of ideal and treatment for the childhood of the nation? I know full well the need of differentiating the curriculum between elementary and secondary education after the age of twelve—a differentiation due to the divergence of aim and the more immediate claims of earning a livelihood, with its effect on the length of the course. But up to this age the common needs of humanity surely claim common opportunities and common treatment.

Upper School Curriculum.—When, however, we come to consider the curriculum for girls between the ages of fourteen and eighteen or nineteen, are we equally clear as to our aim? Again I have specially in mind the average girl rather than the girl who will follow some professional career.

Languages, history, science, mathematics, &c., cannot be justified in the curriculum solely on the ground of the mental training they provide, though this is undisputed. The balanced judgment, the habit of weighing evidence, the imaginative interpretation of the life and experience of others, which we look for from these studies, are qualities that can ill be dispensed with when girls leave school for the larger world. But is there not a danger lest we fail to show the more immediate connection between the subjects we teach and the lives, present and future, of our pupils? Have we really grasped the importance of bringing each subject into line with its application in after life, or even of showing the relations of subject to subject? Both home life and school life will gain in richness and interest as there is more *rapprochement* between the two.

The application of science, for instance, to "the relief of man's estate," as Bacon phrased it, is no degradation of the subject, but invests it, at any rate in its earlier stages, with a practical interest, which is the surest way to a quickened attention and intelligence. "What is the use of such and such a subject?" is a question that, if asked in a liberal spirit, has a legitimate claim for answer. When once this claim is more clearly recognised by teachers, adaptable materials will be found in most of the subjects taught, if not in all. The details of the working out of this closer connection between subjects taught at school and activities and interests of both home and a larger sphere (as, *e.g.*, correlation between science and domestic economy, between history, geography, and economics and the present industrial conditions of society) do not fall within the scope of my remarks: they need the co-operation and experience of many minds. There is already among our elder girls a latent or immature interest in such subjects which only needs guidance to be of real service later. This interest is seen in such fruits as the United Girls' Schools Mission (now embracing a hundred schools), in Settlements, and other forms of philanthropic endeavour. But the need of the study of social problems must be at least indicated, even if not actually given, at school. The need of the knowledge of some principles in economic problems was forced on my attention by the evidence of a one-sided sympathy and general condemnation of the employer by some sixth-form girls after visiting last year the Sweated Industries Exhibition. In this connection it is interesting to note a recent development of the Student Christian Movement—*i.e.*, its promotion of the systematic study of social problems among college students.

One thing, however, is plain from the outset, and that is that our object will be best secured, not by any artificial or rigid schemes, not so much by any sweeping alterations—innovations in time-table and curriculum—as by the kind of teaching we can secure.

It is indeed true—and we are thankful that it is so—that the school world already has great ideals—ideals of justice and love which are the very foundation of all human life in societies, both small and great. What is still needed, and will always be needed, is to make those ideals so forceful and telling that they should become part of the very moral fibre of our pupils, and be carried by them into the larger world they will enter when school days are past. It is here that the personality and influence of the teacher is of such paramount importance: our own interests and dominant purpose in life will inevitably make themselves felt, whether we are aware of it or not. Life alone can quicken life, and the knowledge that is related to living interest at every point will become an instrument and a means not only of self-culture but of social service.

Advanced Bookkeeping for Commercial and Accountancy Classes. By Walter Grierson. vi+226 pp. (Blackie.)—An excellent manual, clear, full, and adapted to modern business methods.

HOME ARTS IN THE SECONDARY-SCHOOL CURRICULUM.[1]

By M. A. Gilliland, M.A. (Lond.),
Headmistress of Haberdashers' Aske's Girls' School, Acton.

IT is with a very real diffidence that I venture to read a paper before an audience such as this, and, because of that feeling, I shall not speak in general terms, but shall, with your permission, confine myself to a brief description of the scheme we have worked out—or rather *are working out*, for a scheme that is felt to be complete is thereby shorn of much of its interest, and of the romance that vivifies and ennobles all adventures in the world of experiment. At the same time, I believe that for all schools the principle is the same, and that, while "conditions" may vary the method of instruction, no curriculum is complete which does not provide training in home arts for *every* girl in the school.

That I may make clear the position—relative and absolute—that we give in the Haberdashers' Acton School to the domestic sciences, I must just indicate the general characteristics of our curriculum. Our girls—450 in number—range from eight to nineteen years of age. I do **not** take into consideration the preparatory children—from six to seven years of age. The time-table makes provision for all English subjects, drawing, singing, gymnastics, mathematics, French, German—with an opportunity of taking Latin in the fifth form—science, chemistry, physics and botany (girls do not give up botany when they begin chemistry), and domestic science, or, as I prefer to name it, home arts. Our school hours are 9–12.30 and 2–3.30 in the Lower School, and 2–4 o'clock in the Middle and Upper School. There is no home-work and no pressure from external examinations.

Every girl in the school goes through the complete course of home arts—cookery, &c., is not for the "duffers" or the "poor dears" of the community, and the girl preparing for intermediate arts or science does her one and a half or two hours at housecraft as eagerly and as thoroughly as the girl who is destined for purely home life. The instruction ranks as any other school subject, and herein lies an important point—the subject must be treated with the respect and dignity accorded to, say, mathematics, or science, or languages. If girls get an idea that anywhere is good enough for the cookery class, and that anyone can teach it, they will naturally never give their best effort and attention. In my own case the cookery mistress has also charge of an important fourth form, and has no housekeeping duties or supervision of the school servants. The matron does all that—the teacher of home arts is entirely *in* the life of the school as form mistress and as specialist.

Naturally, needlework begins the course, and at eight years old in Form I. we start sewing and continue it throughout the Lower and Middle School, *i.e.*, until about fourteen. At first lessons are forty-five minutes, then one hour, and in the Middle School one and a half hours long. In the Middle School half the class goes to science and half to needlework on one day, and changes over, say, on the day following; therefore there are never more than fifteen in a class. In no class do the girls merely practise stitches—all the work is "useful." The little first-form folk are very proud of the soft canvas dusters that each makes for her very own division of the wall blackboard. The next class makes a wrapper to keep the work clean in the cupboard and to spread over the desk during the lesson—for the Lower School have needlework in the ordinary class-rooms, all of which are provided with fair-sized tables on which cutting-out can be done. Pinafores, to be worn during the needlework lesson, are next undertaken, and when these are finished girls are ready to go on to flannel-work, and here we allow the use of specimens; few people want flannel garments nowadays, so we teach the stitches on a flannel sampler. A camisole comes after this, and then the girls make large cookery aprons and sleeves. They draft and cut out throughout and all long seams are done by the machine. (It is a great delight to a youngster to learn how to machine.) Quick workers design simple embroidery for the bib and pocket of the apron.

The scheme works so that a girl entering at twelve goes through all the stitches in the two years before she comes to a class taking cookery—so that everybody by fourteen has satisfied us that she can do a certain amount of needlework—and at 14–15 she begins cookery, and at the same time all the chemistry teaching is brought into vital relation with the new subject.

But before I go on to this, may I say a word about the cookery-room? We have a bright room at the top of the building. Our aim in its equipment was to keep it as simple as was compatible with thorough and scientific efficiency. The walls and all the woodwork are white—white tiles back the walls against which are the stoves—a large Herald range and a gas-stove. We have two sinks, racks for boards, and shelves in plenty for saucepans, tins, &c. We have tried, while keeping things simple, to teach by precept and practice that the good housewife is quick to discover a new "dodge," and so we have our patent draining-boards between the sinks, a natty contrivance for hanging up tea-cloths, and another for keeping dishcloths aired and sweet. There are four large tables in a hollow square, and under these are forms, so that the girls can sit for an explanation or short demonstration, and when busy doing practical work themselves can push the forms under the tables. All cleaning of this room, except the range, which is only cleaned once by each set of girls, is done by the classes.

Though one of the main principles in our teaching of cookery is that scientific method should be taught, and that the girl should learn the chemical

[1] A paper read at the Conference of Headmistresses at Manchester, June, 1908

reason of the changes and processes she brings about in cookery, I do not like the plan of having the cookery-room and laboratory combined. To be quite frank, I don't think it is a nice idea. Food should be scrupulously handled, and even in the largest room there is danger of the chemicals encroaching on the cookery; and, personally, I do not fancy fish cooked during and amid the preparation of sulphuretted hydrogen or chlorine. And again, at least in my own case, I find the laboratory and cookery-room needed at the same time. Our Upper School classes all divide for "home arts" as for science, and the lessons are one and a half or two hours per week, so that we often keep two laboratories going and two housewifery rooms.

But I believe most intensely in the intimate correlation of chemistry and cookery. The two should be inseparable. They are; and I have often found experiments going on in the laboratory with meat, eggshell, white of egg, or potatoes, and in the cookery-room the test-tube and the retort are very useful and ordinary pieces of equipment.

May I just indicate the general lines of this correlation? When, in the first year of cookery, the girls are learning the principles of roasting, baking, boiling, and stewing, in the chemical laboratory they are learning about albumen and carrying out numerous experiments in connection with it. Bread-making in the cookery-room means starch, sugar, fermentation of sugar, alcohol, and acetic acid in the laboratory.

The principles of combustion, flame, coal-gas, &c., are taught with special reference to the fire and gas-stove in the cookery-room. And so, by the time the girls reach laundry-work in the home arts course, they are dealing chemically with the hardness of water, with softening agents, and with the composition and properties of soap.

But I will not weary you with details of the scheme. Abundant points of correlation will at once suggest themselves to your minds.

In the cookery, the practical idea is not to teach a great many dishes, but to make clear the principles of the main processes and to show the girls that, if you know the foundation theory, you can invent all kinds of new dishes.

Throughout, the girls learn the food values and the right proportion of the various kinds of food in an ordinary household round of meals. They learn to plan for few and for large numbers. They draw up *menus* for a week, and, a very popular experiment, they work out plans for holiday meals so that the mother may be persuaded to entrust them with all the ordering for the family. The fact that we have no homework leaves leisure for a good deal of practice, and in many households the "Saturday morning bake" has become quite an institution. In their note-books the children keep a section for putting down all they do at home, and space is reserved for family comment. I have found immense interest taken in these entries by the homefolk.

This course lasts for two years. Then one term is given to simple laundry-work. The girls learn to wash and do up laces, blouses, &c. No heavy work is undertaken: our idea is to make it easy for a girl to indulge in all kinds of dainty and charming washing dresses and blouses, and yet be independent of the ravages and the extortion of the average laundry.

This brings the girls to seventeen or seventeen and a half years of age. During the last year, from seventeen and a half to eighteen and a half or nineteen years of age, they take up a course of easy dressmaking. A plain serge or linen skirt and a shirt blouse are made by each pupil. Girls who work specially quickly draw out a design in the art class and embroider the bodice and even the skirt. There are a good many of my sixth-form girls to-day wearing pretty linen dresses made entirely by themselves, and it is very delightful to see the shy yet proud way in which a girl will tell you that she made her frock in the summer holidays. She can do this the more easily as she has been taught to draft her own pattern, cut out and fix all her work herself, and machine all the long seams.

That the subject is popular is beyond doubt. The girls love it, and the parents are very generous in their appreciation, especially the fathers, and neither music examination nor approaching "Matric." or "Inter." ever brings the request: "Will you be so very good as to excuse So-and-so from cookery or dressmaking?" Indeed, I have some very delightful letters from parents, telling me how very helpful and practical they have found their girls during some unexpected domestic crisis, and one father came specially to see me to tell me how splendidly his daughter had buckled to when their cook suddenly fell in, and, though the visitors were already arriving, had pulled the thing through and served the dinner only a very little behind time.

This is encouraging to us in our work, but more helpful still are some of the glimpses I have had where the interest aroused in practical home duties has brought a sense of more real nearness and closer comradeship between mother and growing daughter.

I believe that this subject of home arts claims a place in our curriculum as a means of intellectual training in scientific method, as a means of training in skilled handwork, and as a moral training—moral because it brings into practical prominence the claims of the home and the dignity of the daily round of household duties. If it only taught the girls that no task, however menial, is unworthy, if done with all the zeal of heart and brain, "home arts" would justify itself. It does this, and more. It is truly educational, for it gives preparation for life. Our pupils are to be scholars, but they are women first. Even if the girl is to be a professional woman, there is every chance that at some time she will be the better for knowing these things; and if the sacred call to build a home comes to her, she will answer the more faithfully because of this educational training. Her husband will find in her not the merely

intellectual companion who is ignorant of housecraft, not the rule-of-thumb housekeeper harassed and lacking in method, but the cheerful and cultured comrade of his life, the quiet ruler of a home in which things go with that ordered smoothness which is so sure a sign of disciplined efficiency, and the sympathetic, understanding sharer of the ideals and ambitions which he cherishes in his work in the busy world of men.

If we can do ever so little to bring this about our work will not be without its great and abiding reward.

SOME CONTRIBUTIONS OF THE CURRICULUM TO A GENERAL COURSE OF HOME SCIENCE.[1]

By Amy Bramwell, B.Sc.
Headmistress of the Eltham Secondary School.

IT has been said that society is divided into two classes: those who think and cannot use their hands, and those whose hands must work under the dictates of others' wills. If such a division exists, our schools must be to some extent responsible. Their lines of activity cannot have run as they should, parallel with the forms of work to be carried on in later life. This perhaps has been more true of girls' schools than of boys'.

We have taught girls to think and have seen the necessity of training them to do, but we have not sufficiently maintained the balance between intellectual and practical experiences.

Home economics in schools plainly opens to us a new and great opportunity of giving practical effect to our contention that the school should be a serious preparation for life. At a time when school must make large demands upon the modern girl, leaving to her fewer opportunities than before for home training in the home itself, we have an applied science, the pursuit of which in school and university will raise home activities to the rank of a profession, and will help the attainment during school life of some, at any rate, of that practical skill so necessary before a profession is entered upon.

It seems, however, impossible in the present state of our too-crowded curriculum to add one more subject to our time-table. We have already more than enough to do in school. We may be obliged in our dilemma to begin by approaching our old subjects from a new point of view. If we could gather together all the present school forces valuable for home science, and concentrate them, we might make them truly effective. If, by adjusting school work afresh, extending here, limiting or omitting there, we could teach a girl to look upon housecraft in the right way, and could give her such opportunity of practising it that she would leave school as well equipped to manage a house as her brother is to begin his professional career or to enter an office, we should indeed be willing to take some trouble about it.

The general equipment of all girls in a school for their work in the world as women is a different problem from the special equipment of certain girls in domestic science courses or departments. Of these special courses, whether alternative with VIth Form work or post-school departments, others have spoken who can do so with weight of experience and intimate knowledge of their working. The domestic science courses now being pursued in many of our first-grade girls' schools will afford valuable guidance and a great stimulus to further experiment.

But these courses and departments must be for the *few* girls. Some general course is needed for *all* girls, and it is towards this that our present curriculum may contribute. We should follow no longer the exact lines mapped out in boys' schools for their future work as men. The time has come to map out our own lines for preparing girls for their future work as women; and in doing so we must remember that, whatever a woman's work as wage-earner may be, she will, unlike her brothers, have a double claim to meet: that of work and that of home. It falls to most women to be heads of homes sometime in their lives, and the head of a home—even where she be but the organiser of others' handwork—should know how to do that work herself.

The central interest of a home science course must be scientific, but its subject-matter should surely be practical. The lesson on a burning candle must be completed by a lesson on how to trim a lamp; a lesson on the potato as a source of starch followed by a lesson on how to boil a potato. We must take actual processes of home routine, and refer them back to the great scientific principles on which they rest. We must answer the question Why? but the question must have been asked about something actually done or observed by the girl herself. We want to get true thinking through the direct effort of doing under proper guidance.

What we wish to produce is the right point of view of homecraft, with just as much practice as will make a girl "apt to learn" when she is plunged into real housekeeping, cooking, or home-nursing. Our school course in home science can never in itself create experienced housekeepers, cooks, or nurses, but it can help towards this by turning a girl's thinking powers to household questions—in fact, along the line upon which she will have to turn her thinking powers later. This it will do best by giving the girl opportunities of doing some of the things she will have to do later.

It is just at this point that the school, and especially the day school, finds its great difficulty. To provide means for at least enough of the doing to make the thinking effective in real life is not easy, especially when we emphasise the fact that the thing done should have been really needed. The artificial creating of needs—the making work in order to supply work—should, as far as possible, be avoided. It is true our school dinners create a practical need on a large scale, but for

[1] A paper read at the Conference of Headmistresses at Manchester, June, 1908.

purposes of instruction in cooking there are drawbacks to their use. School gardens, games clubs, needlework materials, and school stationery can supply actual accounts for the arithmetic lesson—but not in large quantity. The care of a dining-room or schoolroom, the washing of school table-cloths or dusters, the price and quantities of school coal and cleaning materials, the making of children's own garments supplied from home are developments much to be desired, but in some cases difficult to follow out, especially in large schools.

In small schools it seems possible to make the needlework contributory to home science throughout its course. I have seen the zest given to sewing by the actual choice (within limits) of the garment to be made. The pride of an Upper VIth Form on needlework inspection day, when every member of the class wore a school blouse, drafted, cut out, sewn, and trimmed by herself, has come within my own observation. A form mending-bag, into which clean worn garments are put to be mended for home, or for winter gifts to the poor, has given obvious point to the year's needlework; and stockings from home, mended in class, have been a real contribution to a household need. Dusters, teacloths for school, small surprise presents, cash bags, overalls, anything in fact which serves a real need, forms a living centre of interest.

Arithmetic, too, may supply much more than it has yet been called upon to do. Here we should deal with real bank books and bank charges, rather than with the abstract "banker's discount." We should make and use actual bills and vouchers, money orders, demand notes for rates, and tax forms; and besides all these (the tools of a resourceful arithmetic teacher) we need revised books of arithmetical examples dealing with house accounts, school requirements, garden produce and prices, rather than mere imaginary transactions of commerce.

History and science can in their turn contribute; but these perhaps more suitably at stages rather than throughout the whole course, as in needlework and arithmetic. The Vth or VIth Form history might readily contribute to home science. Preparation for citizenship, and for a position as a householder, forms a suitable top-stone to a general course of history, as well as an important part of household economics. It is not until the Upper School is reached that a useful study can be made of civic institutions, methods of local government, and charitable relief—subjects suitable for all elder girls, but especially for girls entering upon home careers.

In the Middle School we shall look to science, and more especially to chemistry and physics. These up to now have been our main contributors from the general curriculum, embracing as they have done in many schools the useful year or more devoted to the chemistry and physics of common life. Here, however, we may find it advisable to develop our methods further. We have taught chemistry illustrated from everyday life. We may find it more useful to teach cookery and laundry-work—always taking care to keep the point of view of chemistry prominent. With little kitchen equipment, the cooking of a few simple things will form a better basis for the chemistry of food than many of our lessons devoted to the explanation of proteids and their action, or an examination of them in test-tubes. A caretaker's copper and a few girls' overalls, handkerchiefs, or school towels to be washed, will afford more effective teaching on hard and soft water, and the practical chemistry of solution and cleansing, than many test-tube precipitates observed at the benches. Such a course in food chemistry or laundry chemistry, taken in the middle of a school, before the serious pressure begins, can be suitably extended for girls of the "remove" type, and this is a further reason for taking it. It does not stand instead of the pure science course; it is merely a stage of it, and would come after the preliminary science work, say at the age of fourteen, before the specialised science, physics, or chemistry would begin.

It may be possible to call to our aid the holiday energy of girls from twelve to fifteen; and, further than this, the co-operation of parents. Definite holiday tasks, with time given at the end of term for explaining what should be done, and time at the beginning of the next term for examining what has been done and the records of how it was done, might add to the reality and value of household work. Such tasks, for instance, as washing and ironing lace or pocket handkerchiefs, marking serviettes, cleaning silver or glasses, making beef tea or gruel, could be suitably judged at the end of the holidays, and would form starting points for further discussion and trial. Possibly some parents might object to this holiday work; some surely might welcome the attempt to deal scientifically with practical household matters, and to raise housework to the level of a school subject.

But for all this we want the right teachers; and these are not easy as yet to get. A really scientific background, coupled with a sufficient practical experience, is a combination which the ordinary first-class science mistress cannot as yet supply. We may have to wait until the domestic economics courses of our universities have been worked through before we get science mistresses really prepared to deal with home science.

In the meantime we may perhaps make a direct practical appeal to our well-equipped drill mistresses. We can begin by enlarging the usefulness of our drill lesson, turning it, in fact, into a health lesson. A sensible practical interest in personal health is a sound basis for the care of others' health and comfort—the future work of most girls. The drill and games provide a much more natural centre of interest than the old physiology lesson, however wisely and reverently that may have been given. Diagrams and bones have a remote and unreal interest when the actual objects and conditions required for discussion are there instead. Such conditions are supplied

by a group of children after a game of net-ball, sitting in wraps and coats round a sensible and popular drill teacher, who explains the need of wraps and baths after violent exercise. These health talks have been known to produce all the practical results desired. More than half a junior class of day girls reported themselves as having had hot baths immediately on reaching home on games afternoon—and the hot bath in some homes is not an easy thing to get. Woollen and more hygienic underclothing has been permanently provided by not a few of the parents of that same class of younger girls as a result of the health lessons; and most of the children, after discussing freely with their teacher the arrangements for ventilation in their own bedrooms, adopted the improved plans suggested by her.

It must be admitted that the sympathetic and wise drill mistress who tells the right way and why, and at the same time tactfully avoids a too direct and pointed criticism of home plans, is not to be found easily. If, however, this wise informal teaching can be secured, the whole range of home experiences can be made useful. A year's course of this kind at twelve or thereabouts, and a much more scientific course four years later, would form a valuable framework to home science. The earlier course is empirical and given at a stage before the girl becomes very self-conscious. The later course demands a better knowledge of science and a more purely scientific interest on the part of the girl.

Thus needlework, arithmetic, drill, science, history, can all usefully contribute, and have done so in many schools. Of other subjects—drawing; nature work, and botany, with their developments in gardening—much might be said by those whose experience lies along these lines. Whether all this adaptation is feasible or fruitful in any one school, experiment only will discover, and the difficulty of experiment will lie in unification. For the home science course must be one—not many; and the personality, resourcefulness, and grasp of several teachers will have to combine to make a living and intelligent whole.

The theoretical work of our schools should suffer no degradation or neglect in consequence of this pursuit of home science. It is not empirical doing we advocate, nor the doing for doing's sake, although the capacity for doing is incidentally valuable. What we want is the doing which tests the knowing—the knowing which arises out of the doing. Utility may be a sanction, but it is not the school sanction for home science. The real sanction for home economics in school is this—that true mental growth comes best, not from intellectual processes alone nor from practical activities mainly, but from the continual interplay between ideas and their embodiment in action.

Good Health: Part II. By F. H. Shoosmith. 48 pp. (Charles and Dible.) 2*d.* net.—A clear and trustworthy sketch of the hygiene of food, the teeth, skin, muscles and bones, and the sense organs.

THE CORRELATION OF WORK IN MATHEMATICS AND PHYSICS.

By W. H. Hewitt, B.A., B.Sc., A.R.C.Sc.
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THE strenuous efforts of Prof. Perry to bring about a reform in the teaching of mathematics are bearing fruit in the introduction of practical mathematics into the curricula of secondary schools and the establishment of mathematical laboratories. Whilst all practical teachers will welcome this progressive movement towards the study of mathematics as a science based on experience, it must be borne in mind that much of this work, labelled "Practical Physics," is being done by the science masters in the physical laboratory. Now, anything that tends to co-ordination is good, and it is without doubt an advantage to have a subject treated from more than one point of view; but there is a danger of unnecessary overlapping and vain repetition.

This work was included in the physics course for various reasons. Accurate measurement is the foundation of natural science; practical methods were ignored, or even despised, by the mathematicians, who insisted too much on the abstractions of their science; and, again, the science teacher's training fitted him for that kind of work, and he, of course, had at command the necessary apparatus. It is difficult to overestimate the assistance given to the teaching of mathematics by the inclusion in the physics syllabus of a preliminary course of measurement, even in schools where no co-ordination of the two subjects has been attempted. In schools where the various parts of the curriculum are not completely isolated, and where their mutual relations are not ignored, co-ordination of mathematics and physics will probably have gone so far that a physics man either has charge of the mathematics or takes mathematics in the lower classes. In such schools the introduction of practical mathematics presents no difficulties, at any rate in the lower classes. A change of label is all that is necessary, provided always that these measurements are included in the science scheme, which is the case in most schools. (In other schools time for the new subject may be found by increasing the total number of hours devoted to science or to mathematics, or where that is impossible, by cutting out obsolete portions of the arithmetic syllabus or properly co-ordinating geometry with mathematics.)

In the upper classes, where possibly mathematics and physics are taken by separate masters, it will be found necessary to divide the work between them. The purpose of this article is to consider what experiments are most advantageously done by the mathematical master in the mathematical class-room or laboratory, and what are best retained in the physics syllabus.

The course of physical measurement referred to above generally extends over three or four terms, and proceeds much upon the following lines:

(*a*) MEASUREMENT OF LENGTH.—Examination of scales graduated in centimetres and millimetres and inches and tenths. Relation between metric and British units determined by measuring convenient lengths in both systems; number of centimetres in one inch, one foot, &c., thus calculated. Determination of π by measuring the diameter and circumference of a circle, the latter by wrapping paper round a cylinder, and by rolling a coin or any convenient disc along a straight line. Constancy of π seen by measuring circles of different radius.

(*b*) MEASUREMENT OF AREA.—Rules for the area of a square, rectangle, triangle, parallelogram, circle, &c., discovered by use of squared paper. Areas measured in inches and centimetres, and the relation between the square centimetre and the square inch obtained by division. Areas of laminæ of irregular outline determined by comparing their weights with those of regular laminæ of the same thickness.

(*c*) MEASUREMENT OF VOLUME.—Volume of cube, &c., deduced from definition of unit volume. The use of graduated measures; burettes, pipettes, &c., for liquids. Volume of irregular solids by displacement of water and by comparing weights with those of regular solids.

(*d*) DETERMINATION OF WEIGHT AND DENSITY.—Relation between British and metric units determined by weighing in grams and grains. Weight of solids the volume of which has been measured, and weight of unit volume calculated. Density. Weights of equal volumes of various substances found, and idea of specific gravity introduced. Relation between density and specific gravity.

All the work with the exception of some parts of (*d*) may be done in the mathematical class-room, if considered desirable. At the Strand School it occupies three classes, in each of which the master who takes science also takes mathematics. The lowest two classes do the work in their own class-room, while the third class is taken in the physical laboratory. In most cases it will probably be thought advisable to reserve for the physical laboratory experiments involving the use of liquids, and from the point of view of mathematics the aim of this portion of the work is rather to establish the general relation between weight (the idea of mass must be left until later), volume, and density than to investigate differences of density.

For the same reasons the following portions of the scheme are most suitably retained by the science master.

SPECIFIC GRAVITY of liquids (1) by comparing weights of equal volumes measured by pipettes of liquid and of water; (2) by the density bottle.

Verification of the principle of Archimedes by cylinder and bucket experiment and other methods.

Specific gravity of solids and liquids by the principle of Archimedes.

Specific gravity of solids lighter than water (1) by means of a sinker; (2) by using a liquid in which the solid just floats or behaves indifferently.

FLOTATION.—Measurement of the depth to which a weighted rod sinks in various liquids, and proof that the weight of liquid displaced is equal to the weight of the rod.

Determination of the increase in the volume immersed and the weight of liquid displaced when known weights are placed upon a floating body.

Use of hydrometers of variable and constant immersion.

Brief practical verification of some laws of fluid pressure.

DENSITY by the U-tube: (1) liquids that do not mix; (2) liquids that do mix.

Hare's apparatus.

Density of air.

Experiments illustrating the pressure of the air, leading to the barometer and Boyle's law.

Boyle's law often marks the point at which graphs are introduced; but much of the preceding work lends itself to graphical representation, and quite young boys can be made to appreciate the meaning of "curves." The writer's practice is to introduce into the lowest classes such investigations as the change in weight from day to day of a basin of water or methylated spirit, germinating beans, a drying plant, &c. The boys in pairs are entrusted with the consecutive daily weighings, and the whole class plot the curves on squared paper. Such experiments are best reserved for the science laboratory, and serve as a good introduction to the plotting of meteorological observations and the many curves incidental to the physics work.

The syllabus outlined thus far is amply sufficient for three or four terms, at the rate of an hour and a half given to practical work per week. The portions (*a*), (*b*), (*c*), (*d*) belong properly to mathematics; but they form an indispensable introduction to physics, and the arrangement referred to seems advisable, for much differentiation of subjects is to be deprecated in lower classes.

With the completion of Boyle's law, the ways of physics and mathematics may be allowed to diverge. Heat or magnetism and electricity will probably be taken up in physics, while the legitimate development of practical mathematics is in the direction of practical mechanics. The following experiments, hitherto part of the physics course, may therefore be transferred to mathematics:

Calibration of spring and measurement of force. Spring balances arranged in series and in parallel, and inclined at an angle.

Resolution and composition of forces. Resultant of two forces acting at a point (*a*) by calibrated springs; (*b*) by weights in scale-pans suspended by cords passing over smooth pulleys.

Parallelogram of forces. Resultant of three forces at a point. Triangle of forces. Forces in a simple crane. Inclined plane. Equilibrium of five, &c., forces acting at a point. Polygon of forces. Funicular polygon. Forces in braced frames.

Centre of gravity. Moments. Levers.

Velocity and acceleration. Laws of motion by Atwood's machine.

Mass and force. Ballistic balance. Momentum. Impact. Coefficient of restitution.

Laws of friction. Friction of a single pulley. Machines: velocity ratio, relation between force and load, effect of friction; efficiency.

Moments of inertia. Simple harmonic motion. Simple pendulum. Kater's pendulum. Determination of g (*a*) by pendulum; (*b*) by vibration of a spring; (*c*) by rolling a cylinder down a smooth plane.

Elasticity. Young's modulus. Torsion. Rigidity, &c.

The transference of this important work to the mathematical master and its incorporation in the mathematical course will undoubtedly render the mathematical teaching more effective. Nor need the science master complain of a change that will enable him to begin heat or magnetism and electricity a class or two below his present starting-point; for there seems no reason why this work should be deferred until the completion of the various specific gravity determinations and Boyle's law. Indeed, the early portions from, say, "measurement of force" to "triangle of forces" might well be done concurrently with these determinations. The rest of the scheme would then form part of the mathematical work in the classes taking heat, light, and magnetism and electricity. How much of this practical mechanics will be taken will, of course, depend upon the time available, and the aims of the school and the kind of education it seeks to give.

No attempt has been made in this article to give a complete syllabus of practical mathematics; reference has been made only to experiments that have hitherto been included in the physics course. Much other mathematical work, of course, lends itself to practical treatment without overlapping practical physics.

INSTINCT, CAPACITY, REASON.[1]

By G. Archdall Reid.

THE main contentions of Dr. Hayward's book are: "(1) That the normal conscience is not a ready-made and unalterable 'faculty,' born good or born bad, as biometricians and others would almost imply, but that (2) moral instruction is necessary for its development." Most people have opinions on this point, and in most cases the opinions are founded on guesses. Biometricians, in particular Mr. Francis Galton and Prof. Karl Pearson, have attempted to place the matter on a scientific basis. They have ascertained, as the result of a laborious statistical examination, that children *resemble* their parents mentally in the same degree as physically. There is no reason to doubt the correctness of this conclusion. But from this inference—an induction—they draw another inference, a deduction—viz., that the mental resemblances are due, not to similarities in mental training, but to inheritance. "The sameness surely involves something additional. *It involves a like heritage from parents.* The degree of resemblance between children and parents for the physical characters in man may be applied to the degree of resemblance between children and parents for psychical characters. We inherit our parents' tempers, our parents' conscientiousness, shyness, and ability, even as we inherit their stature, forearm, and span."[2]

If Prof. Pearson's reasoning is valid as regards the mental and physical characters named by him, it should be valid also as regards other characters. Now, offspring reproduce eyes, fore-arms, and hands, for instance, with much greater certainty than they reproduce parental peculiarities of eye-colour or measurements of fore-arm and span. Here the degree of resemblance is, roughly, "unity." Similarly, they reproduce the language of their parents, their notions of modesty with respect to clothes, and their habits of wearing boots and hats with much greater certainty than they reproduce conscientiousness, shyness, and ability. Here again the degree of resemblance between parents and children is unity. Must we suppose, then, that in England the language of the country, the national notions of modesty and habits of wearing hats and boots are inherited in the same sense as eyes, arms, and hands. The line of reasoning is precisely that adopted by Prof. Pearson. No one doubts that if an English child were reared by African cannibals it would have an English body when grown; but can anyone believe that its mind would resemble that of an average Englishman in the same degree?

Prof. Pearson declares that "intelligence can be aided and trained, but no training or education can create it. We must breed it." But what is intelligence? It is that faculty by which we *consciously* adapt means to ends. Now obviously we cannot *consciously* adapt means to ends unless we have previously learnt to do so. A caterpillar which builds itself a cocoon is not intelligent, however skilfully it works. Since it does not appeal to past experience, it is guided merely by that blind impulse, the very antithesis of intelligence, which we term instinct. A man who builds a house is intelligent, since, guided by past experience, he consciously adapts means to ends. Unlike an adult man, a new-born baby has no intelligence, for he has no past experience to which appeal may be made; but, unlike the caterpillar, he has vast *capacity*, vast memory, vast powers of *learning* to become intelligent. Intelligence, then, is that which arises through the interaction of capacity and experience. An idiot or imbecile is merely a person with a defective memory, one who cannot profit by experience, who cannot become intelligent. A particularly intelligent dog or cat is one that profits particularly well by experience. We always measure the intelligence of men and brutes by the way in which they profit by experience. Prof. Pearson, then, confuses intelligence with instinct on one hand and with capacity on the other. We can no more breed intelligence than we can breed a knowledge of the French language. It is not an innate character.

Prof. Pearson declares in effect that man is not an educable animal. Dr. Hayward declares that he is, and that his intelligence, together with all his other intellectual and moral qualities, is a product of this educability. He writes clearly and vigorously. The evidence he marshals is very massive and, I think, conclusive. It has

[1] "Education and the Hereditary Spectre." By F. H. Hayward. xv+147 pp. (Watts.) 2s. net.
[2] Pearson, "The Huxley Lecture"

never been met by the biometricians, who, ignoring all but their own data, have not even troubled to analyse the nature of intelligence. One error I may mention. Dr. Hayward declares that I believe in an "inherited drink craving." He is mistaken. I believe merely that some men have a greater capacity for *acquiring* this craving than others. It is this capacity which tends to be inborn and inherited—just as a superior capacity for learning to become intelligent tends to be inherited. The actual craving is a product of experience.

The question as to what is innate and what is acquired in the human mind lies at the basis of the whole problem of education. Until it is answered we cannot know what it is possible to achieve by mental training, nor indeed how best to achieve it. The philosophic teacher who desires to plumb the depths cannot do better than study Dr. Hayward's very excellent book.

THREE BOOKS OF HERODOTUS.[1]

THESE three volumes contain a mass of material which cannot be adequately dealt with in the columns of THE SCHOOL WORLD; but it is very proper that we should direct the attention of all classical students to their merits. They form a whole in themselves, although they only contain one-third of the text of Herodotus; but this part of the text describes the great Persian War, with Salamis, Marathon, and Plataea. The subject raises many thorny points, historical, strategical, topographical, upon which a host of writers have written, are writing, and will write. All these books and pamphlets Dr. Macan seems to have read, marked, and inwardly digested, and his results are given partly in the introduction and partly in the notes.

The introduction, after establishing the claims of this section of Herodotus to a unity of its own, discusses the questions, whether the work as we have it be incomplete, and which part was written first. Good reasons are given for believing that Books VII.–IX. were the first written, although they may have been partially revised. The work as we have it is held to be complete; but it appears that Herodotus either wrote or meant to write other books; *e.g.*, the Ἀσσύριοι λόγοι.

The student will probably be most attracted by two other aspects of the introduction: the discussion of the historian's sources, and the estimate of his value as a historian. These come in the preface to vol. ii., which contains appendices. The account given of the other historians is masterly, and we have not seen anything of the kind done before with the same detail and thoroughness. The account is marked by the soundest critical sense. We note, by the way, a well-deserved compliment paid to Thucydides (p. 18), and we gather that Dr. Macan regards him as *historicus*, not *mythicus*, in his own department at least. Here is a chapter in the history of Greek literature better written than it has been done before. Withal, Dr. Macan is quick to see that Herodotus derives quite as much from oral sources as from written. We are agreeably impressed to find that Dr. Macan's opinion of Herodotus as a historian is high; so many have depreciated him (even Plutarch the gentle), and so many have laughed at him. But as a story-teller Herodotus is supreme. There never was such another, and never is likely to be; and it is possible that when readers laugh at Herodotus for credulity, Herodotus is laughing at them. His humour is all-pervading but unobtrusive, and we can think of no one who has just the same deceptive innocence, except Jane Austen.

The notes to this book, besides dealing in detail with points that are better treated under the text than before it, give a host of illustrations from literature and ethnology. Dr. Macan does not waste time in teaching elementary Greek to ignorant persons; but he can think of classical mods. on occasion. Most of his notes, however, are what we look for in a scholar's book. There is no doubt that it will be indispensable to the scholar as well as the historian. The only topic which is left unworked is the text; and no doubt the editor is quite right to leave this to textual experts.

[1] "Herodotus." Books VII., VIII., IX. By R. W. Macan. c+832+458 pp. 2 vols. in 3 parts. (Macmillan.) 30*s.* net.

METHOD AND MADNESS IN ENGLISH TEACHING.

NOTHING could voice more eloquently the present stage of transition in our teaching of English than the little pile of books before us.[1] The phase is illustrated, ludicrously enough, in almost identical words in the introductions to two of the volumes. "The writers have no desire to deal with the subject from a scientific standpoint," say Mr. Roberts and Miss Barter; "the aim of the book is not scientific, but practical," says Dr. Woolley. Without at all agreeing with the writers in their way of putting the matter, we recognise that they prefer at the present time to emphasise the empirical nature of the methods they employ. In the case of the first-mentioned book there is indeed no need for any such modest apology; the book is scientific in the best sense of the word; it is founded upon sound principles and inculcates sound methods; that it is neither pedantically rigid nor irritatingly doctrinaire we hold not a vice but a virtue. The authors would be the last to claim that much of their material is new; their methods in a sense register the high-water mark of the present, while they indicate the rise of the coming flood. What

[1] "The Teaching of English." By A. E. Roberts and A. Barter. (Blackie.). 2*s.* 6*d.* net.
"Handbook of Composition." By E. C. Woolley. (Heath.) 2*s.* 6*d.* net.
"The Practical Précis Book." By W. C. Monkhouse. (Omega Press.)
"Grammatical English." By Dr. F. W. G. Foat. (Ed. Arnold.) 3*s.* 6*d.*
"A Chart of English Speech Sounds"; with key words and notes. By Daniel Jones. (Clarendon Press.) 4*d.*
"The Student's English Dictionary." By J. Ogilvie. Edited by C. Annandale. (Blackie.) 4*s.* 6*d.* net.
"Ogilvie's Smaller English Dictionary." (Blackie.) 1*s.* net.

is really invaluable in their work is the splendid enthusiasm which lights up even the most elementary processes and the insistence on æsthetic considerations, which is the keynote of the book. In so short a notice we can give no real indication of the value of a work which treats adequately—not, of course, exhaustively—of English teaching in the infants' school and in the upper school, which gives most suggestive specimen lessons, which considers the correlation of English with other subjects in the school curriculum, which devotes special chapters to recitation, composition, English verse composition, paraphrasing, and, finally, provides appendices of bibliography and of methods of teaching the mother tongue in other countries. We commend it most heartily to all teachers of English.

Dr. Woolley's book is of a different kind. It is characteristically American—by which we mean that it is designed to meet those special problems of English teaching which are always present in America, but which are seldom met with here. Its scope is perhaps better shown by the author's own words: "Secondly, it may be used for independent reference by persons who have writing of any kind to do and who want occasional information on matters of good usage, grammar, spelling, punctuation, paragraphing, manuscript arrangement, or letter-writing." We think that this second use of the book is more in keeping with its plan than the first: "by students of composition for reference, at the direction of the instructor, in case of errors in themes."

Only part i. of the "Practical Précis Book" is designed by its author "for the use of schools." This part consists of four chapters—introductory, showing the meaning and utility of précis, accuracy, clearness, brevity. In themselves these chapters are quite sound, and we are aware that some schools must prepare for the lower examinations of the Civil Service which require preparation in this kind of exercise. But that such a book should be necessary or desirable as a medium to general school training in precision—even with the London Matriculation as the *terminus ad quem*—we cannot and will not believe.

We are not quite sure for whom Dr. Foat's book is intended. We should conclude from the preface that Dr. Foat had in view the needs not indeed of little children but of young students—perhaps in the upper forms of secondary schools. But when we turn, for example, to the chapter on oral speech we come across a disquisition which seems entirely out of place in a school book. The author's own account of the book is that it "is not a book of formal grammar"; he rather gives as his aim "the supplying, within the limits of a handbook, of a general introduction to the whole subject in the form of practical assistance towards the formation of those *habits of mind* and the attainment of that permanent *attitude of thought* which are indispensable alike to the student of grammar and to those who must write and speak correctly in the ordinary business of life." These be brave words, and so far as we venture to interpret them we think they mean that Dr. Foat's book is an inquiry into the *laws* governing correct English speech and not a recapitulation of *rules* that have more or less conclusively, at different times, been deduced from those laws. The method is unexceptional, but we have an uneasy feeling that the person who would most benefit from its excellent and painstaking exposition is a composite being, whom we have never yet met, partly schoolboy, partly undergraduate, and partly schoolmaster.

Mr. Jones's chart is a plain classification of English sounds—for which detailed descriptions "may be found in an elementary text-book on the phonetics of English." Quite so; and we should have thought that the chart would be found there too.

The two dictionaries which complete our list are good and cheap. In the larger of the two we were at first a little surprised not to find some half-dozen words lately met with in a single *Spectator* essay by Addison; but it is only fair to say that all these words have dropped out of current use, and we think that the editor is well justified in saying that in its present form the dictionary may claim to be second to no work of reference of similar scope. The smaller work is a marvellous shillingsworth; but we wonder whether it is beyond the resource of publishing to provide the same material in a little larger type? The human eye was not meant to battle with such pygmy print. Is the word "co-opt" not common enough now to be included even in a shilling dictionary?

NEW WALL MAPS AND CHARTS.[1]

THESE are the two latest additions to the well-known and most valuable series compiled under the direction of Mr. Mackinder, and therefore thoroughly trustworthy and up-to-date. The preceding maps—Europe, Africa, Palestine, Asia, and North America—have been reviewed already at various times in The School World.

The following are the chief features of the series:

(i) Deepening tints of only one colour (brown) are employed for the varying heights of the land. This is to avoid the confusion of ideas which the publishers contend is consequent on the use of different colours (browns and greens, for example) to mark the highlands and lowlands. We hardly agree with their contention, though we admit there is something in it. The depths of the seas are naturally also shown in different tints of one colour (blue), as to which we only hope it will be less fugitive in the course of years than the blues of other maps (not necessarily the Stanford series) with which we are acquainted.

(ii) The lettering of the names is printed grey

[1] Stanford's New Orographical Maps. I. South America. 52×60 in. Scale 94 miles to the inch. II. Australasia. 58×50 in. Scale 85 miles to the inch.

and not black. The idea is to avoid interference with the graphic effect of the colouring, and the publishers hold that as this grey is "almost transparent" their object is obtained. But there is much virtue in the "almost"; we think the maps are altogether too overloaded with names to be quite satisfactory in this respect; at any rate, the "transparency" suffers. Still, the main physical features at a distance stand out well, and this, after all, is the great *raison d'être* of the wall map.

(iii) Hill shading here and there is used to emphasise features of local significance (cf. the Stuart Range in the centre of Australia). These, however, can barely be distinguished at a little distance. For reference they are useful enough, and as private guides to the teacher who is suggesting the points of the school atlas to his class they are invaluable. As, moreover, they certainly do not interfere with the general scheme of colour, we have no fault to find with their insertion.

(iv) Rivers and lakes are shown in blue, and are quite conspicuous enough for all purposes. The river courses are, rightly, a little exaggerated.

Amongst many points well brought out in the two maps under review we are especially struck with (i) the prominence of the three great highland regions and the three great river basins of S. America, the depressions of Nicaragua and Panama, the triple division of the Columbian, the height and breadth of the Bolivian, and the size and number of the lakes along the eastern foot of the Patagonian Andes, the comparatively narrow water-parting across the centre of S. America, and the shoal on which stand the Falkland Islands, off the east coast of Patagonia; (ii) the union of New Guinea, Australia, and Tasmania by the shallow Torres and Bass Straits, and of the north and south islands of New Zealand by the equally shallow Cook Strait, the definiteness of the famous "Wallace's Line," the dissimilarity of the two halves of Australia, east and west, in respect of their physical geography, and the comparatively enormous size of the Murray-Darling basin.

Altogether we can thoroughly recommend these maps—all of them—for the class-room. It is sufficient to add that the price of each, varnished and on rollers, is 20*s*.

From Messrs. George Bell and Sons come what we believe is the first of their kind, viz., two coloured *contour sheets* for the younger members of the school. They are designed as a first aid to the reading of an Ordnance Survey map. No. 1 consists of four diagrams, showing the meaning of contours and how from them sections of the country may be drawn; No. 2 applies the lesson learnt to a particular district of 24½ square miles round Lochs Lomond and Long. They should be very useful, though we think that the teacher will still rely on the blackboard and coloured chalks for his initial lessons. The size of each chart is 22 in. by 22 in., and the price 5*s*. (rollers and varnished).

SCHOOL EXAMINATIONS.[1]

THE committee was formed in October last to inquire into the system of school examinations and substitutes for them in other countries, especially Germany and America, and to report on these; and to consider what reforms could be introduced into the English system on the lines laid down by the late president of the Association of Headmistresses in her address in June, 1907, so as to remove the existing heavy burden on the schools, while preserving the English tradition of thoroughness and scholarship.

The committee determined to deal with the large subject entrusted to it under the following divisions:

(*a*) Junior examinations, *i.e.*, public examinations for pupils under sixteen.

(*b*) Public examinations for pupils of sixteen to eighteen, in particular, school-leaving and university entrance examinations.

(*c*) Scholarship examinations.

The first step taken was to investigate the examination system, if any, prevailing in the following countries (each one of which was assigned to a member of the committee or to the secretary): America (Miss Wolseley Lewis and Miss Burstall), France (Mrs. Bryant), Norway (Miss Sheldon), Denmark (Miss Hewett), Sweden (Miss Gavin), Germany (the secretary). Appended to this report is a summary of these investigations, and the committee desires to direct special attention to Miss Burstall's report on the accrediting system in America.

On considering the results, the committee found (*a*) that no country except our own has any public examinations for pupils under sixteen; (*b*) that in all other countries the public examination for pupils of sixteen to eighteen takes the form, with trifling variations, of a school-leaving examination, conducted in the school itself, and including a written and oral test, great prominence being given to the latter, *i.e.*, our system of local examinations and university matriculation examinations is unique; (*c*) that the necessity for university scholarships does not exist in any other country, as the universities are either State institutions or largely subsidised by the State.

The conclusion arrived at by the committee on considering the first division of their subject is that it is impossible to justify our existing system of public examinations for pupils under sixteen. They recognise that this is the opinion also of those responsible for the well-known girls' schools, which for many years have refused to prepare pupils for junior examinations, and of the Board of Education, which by its regulations disqualifies for grant a school that presents pupils under fifteen for outside examinations. The committee believes that there are serious evils inherent in the system it condemns: (1) it imposes a curriculum from the outside instead of leaving a school free to plan the curriculum that meets the needs of its pupils; (2) it tends to over-early specialisation, inasmuch as a pupil chooses only strong subjects for his examination and drops those that are weak; (3) it tends to overwork, especially in the case of girls, and that just at an age when by the laws of physiology they need special care and freedom from undue pressure.

At the same time, the committee admits that there are benefits to be derived from examination even at a comparatively early age. Such benefits can be secured by an internal examination conducted by the staff of the school, with or without the help of outside examiners, and such an examination can be made quite free from

[1] From a report of a committee of the Association of Headmistresses presented at the annual conference at Manchester, June, 1908.

the dangers already specified. There is a difference of opinion on the committee as to whether the same principles apply to the examination of music, drawing, and needlework.

The conference of 1908 endorsed the conclusions by carrying the following resolutions:

"That this conference disapproves of external examinations for girls under fifteen years of age, and invites all members of the association to co-operate in refusing to present pupils for them."

The second resolution proposed embodies the conclusion arrived at by the committee in the second division of the subject, though the work is not yet complete in this section. It is:

"That in all public external examinations after the age of fifteen, acting teachers in every case be associated with the universities or other external authorities."

The whole system of external examinations in England seems to be based on the conception that the schools have to be guided by the universities. Fifty years ago this may have been true, but now a certain amount of order has been evolved out of chaos, schools are organised, standards are fixed, and teachers are more highly qualified. They form a profession, and are capable, like medical men, of giving a sound and honourable professional opinion. The universities alone cannot be so fully acquainted with the powers and possibilities of a pupil as are his teachers, nor can they unaided judge of the needs and curricula of schools. In external examinations the co-operation of acting teachers must obviously be helpful to university examiners, as is already recognised in some of the new universities. We desire to see the one necessary test at the end of a pupil's career conducted jointly by those concerned—the school authorities he is leaving and the college authorities to whom he goes.

Appendix.

Examinations and Accrediting in the United States.—There are two systems of admission to colleges: (1) The *Eastern*, an examination by the College Entrance Examination Board, a voluntary organisation of college representatives and teachers in the proportion of two to one. The fee charged is £1. The Board has an office in New York, and holds examinations all over America, in London, and elsewhere. Some colleges still conduct their own entrance examination.

The other is *Western: Accrediting*, viz., the sending up of certified pupils from certain inspected and authorised high schools to the university.

The latter is spreading, is much more general, and is satisfactory to those who work it at the colleges, though they admit its weaknesses—weaknesses which would not be serious in England. A school desiring to be accredited and recognised by a university sends up an application and details of its curricula, text-books, teachers, equipment (especially the library and laboratories), and resources to the proper university office. This sends down an inspector or inspectors, often professors of the university, who conduct an inspection, address a public meeting in the place, meet teachers, &c. The inspector reports, and on his report the university allows the high school the privilege for three years of sending up students who have satisfactorily passed through a fixed course of studies. Each pupil must have a certificate showing the school record of work, percentage obtained, &c., signed by the headmaster, and sometimes by the senior teachers in each subject. If these pupils do badly at college, or are found to be prepared badly, the school loses the privilege. Such pupils themselves may be and are sent down in the middle of the freshman year for another year's study at school.

The weaknesses are: (1) imperfect inspection; (2) fear of responsibility of refusal by headmaster or headmistress. To meet these difficulties the university relies on the sending down of freshmen who prove to be prepared badly. Neither of these would obtain in England, where the tradition gives power to heads of schools and where inspection is thorough.

The merits are that (1) large numbers come to college; (2) the standard of schools is raised; (3) pressure is avoided; (4) the colleges and schools are brought into a closer and more intimate relation.

Private schools may be accredited.

College scholarships, where such exist, are given, as a rule, upon record and proof of need. The examinations by the College Entrance Examination Board of New York are not conducted without the direct and definite help of acting teachers, each paper being signed by some one acting teacher.

There are no "local" examinations in our sense in the United States. In certain cities, especially in the East, the superintendent (director of education) holds what are truly local leaving examinations; *e.g.*, he examines all pupils of the age to leave the local public schools.

Examinations in France.—(*a*) There is no examination for pupils in secondary schools below sixteen.

(*b*) In a series of articles published in *School* in 1904, Mr. Cloudesley Brereton gives the following information on examinations in France: "As a final school-leaving examination and entrance examination to the university and the professions generally comes the *baccalauréat*, which is an examination conducted by the university, but the Board of Examiners is composed partly of university professors and partly of past or of present teachers who do not happen to have been teaching during the past year in the schools from which the pupils are drawn. Furthermore, in this, as in all the above-mentioned examinations, consideration is taken of the pupil's previous work at school—the marks and comments of his teachers are entered in a small note-book called a *carnet scholaire*, and these are duly taken into account in all doubtful cases. Under the new programme the *baccalauréat* can be taken by students in four different courses of study: classical, Latin-science, Latin-modern languages, science-modern languages. The examination is divided into two parts, the second of which is taken a year after the first, except in the case of pupils who have failed in the first examination and succeeded six months later. Each part is further subdivided into two parts, written and oral, which are taken separately. The average age of the successful pupils is seventeen to eighteen years. All who pass obtain the title of *bachelier*, no matter in which section they have presented themselves.

"The school career of the secondary pupil is therefore but little distracted by external examinations. But coming events cast their shadows before, and it is a subject of common complaint that the standard of the *baccalauréat* is set so high that pupils must be subjected to overpressure, even in the lower classes, in order to ensure their passing the examination. This is probably true of those who are below the average in ability, but the cleverer pupils suffer still more from over-work. Every French parent desires to secure for his son a place under Government; consequently the competition for the army and the civil service is enormous, and the standard set in the entrance examinations correspondingly high. The result is that pupils preparing for the various schools—Saint-Cyr, Navale, Polytechnique, Centrale, Normale, &c.—are sub-

jected to very serious over-pressure. It is difficult to see how the evil can be remedied as long as parents are determined to enter their sons for these careers. Neither the State nor the school can be blamed for the faults of the system as it exists. The remedy lies with the parents and French society as a whole."

With regard to examinations taken by girls, the following information has been received (March, 1908):

The *baccalauréat* is taken by a certain number of girls, and the *brevet supérieur* is also taken by a limited number. The numbers taking the *baccalauréat* and the *brevet* are increasing, owing to the double advantage attached to passing an outside examination.

There is no official preparation for the *baccalauréat* in the girls' lycées, but in a few lycées—Grenoble, Besançon, and one or two others—organised classes preparing for this examination are held.

The main examination is, however, that entitled *Certificat de fin d'études*, and is based on the school studies. Candidates must be more than sixteen, and have regularly attended for the fourth and fifth years of the course. The examination consists of a written and oral part; only those who pass the written can take the oral. The examination is conducted by a Jury nominated by the Ministry through the Recteur d'Académie. It consists of one nominee of the Academy, the director of the school, two professors (teachers) of the school, one outside professor, and one modern language professor.

The girls take the *Certificat de fin d'études secondaires*, an examination held at the lycée, which only pupils of the lycée can pass, whereas the *baccalauréat* is public and open to all.

The *Certificat* somewhat resembles the *Baccalauréat Moderne*, but there are differences: the girls study hygiene, and do not go so far in mathematics as the boys. M. Appell, Dean of the Faculty of Science, is of opinion that what the girls learn is often better digested than what the boys are taught. He hopes to get the *Certificat* recognised as a fifth section of the *Baccalauréat*, so that girls who want to work for the licence need not be obliged to begin by working for a *baccalauréat*; but this has not yet been accomplished.

"Free places," *i.e.*, "bourses," are of two kinds—"bourses nationales" and bourses given by the commune or municipality; there are also a very few given by private individuals.

Competitive examinations are held once a year for these "bourses," but the situation of the parents, number of children, services rendered to the State, &c., count for a good deal. When a girl has a "bourse nationale" it will hold good for any lycée in France, but the "bourse communale" or "municipale" is attached to one particular lycée or collège.

The "bourses" have much increased during the last few years. There are in the Paris schools an average of one in eight or ten pupils. The subjects in the examination are so adapted as to suit pupils who have been educated in the elementary schools.

There are no leaving scholarships in French schools. This is due to the fact that the university fees are almost nominal compared with ours. The need of scholarships is, therefore, obviously less, as none of the universities are residential, like Oxford and Cambridge.

EXAMINATIONS IN SCANDINAVIAN COUNTRIES.—The systems similar in the main points are: (*a*) there is no external examination for pupils under sixteen; (*b*) there is a school-leaving examination in which the oral test is very prominent. This examination is only taken by a few girls, who as a rule leave school without undergoing a public test. It is very carefully organised and is conducted mainly by acting teachers.

EXAMINATIONS IN GERMANY.—(*a*) There are no external examinations for pupils under sixteen.

(*b*) The Abiturienten Examen or leaving examination varies in different provinces. Although it is organised for the boys' schools, latterly some girls' schools also have instituted a similar examination. The main features are that the examination is adapted to each district by the appointment of a local committee of management, on which acting teachers take a prominent place, and consists of two parts, a written and an oral test.

THE CURRICULA OF BOYS' SECONDARY SCHOOLS.[1]

THE council of the Teachers' Guild have given careful consideration to the report of the committee of the British Association for the Advancement of Science on the curricula of boys' schools, and have agreed on the following detailed expression of opinion:

1. They approve the conclusion that "there is need for secondary schools of different types, with different curricula or combinations of curricula, because

(*a*) all boys are not suited to the same course of study;

(*b*) the requirements of the different callings upon which the boys will subsequently enter differ considerably;

(*c*) the needs of the schools differ in a considerable degree according to the economic conditions of the districts in which they are situated."

"Broadly speaking," as the committee states, "the secondary schools fall into two different types, viz., those in which the majority of boys remain till the age of eighteen or nineteen years, and then continue their education at places of university rank, and those in which the majority leave at the age of fifteen or sixteen years and proceed to business. There is, however, no sharp line of demarcation between the two."

2. They consider that one modern language, if taught, should be introduced at an age not later than eleven or twelve years, and agree "that it would be a wise educational experiment to postpone the systematic teaching of Latin as an ordinary school subject till twelve years of age," deeming "that such a change will prove sufficiently successful to warrant its adoption." They approve the "opinion that the continued teaching of either of the two dead languages to boys who after serious trial have shown little or no progress in, or capacity for, such linguistic study has little or no educational value; and that, though the mental training afforded by such study is of great value in the case of many boys, yet, in the case of others, such study not only produces no good results, but does positive harm to their mental and moral progress by reason of their incapacity to grapple with its difficulties."

They are of opinion, however, that what is said of dead languages applies to some extent to modern languages also.

They agree with the committee in doubting "whether the authorities in some secondary schools have sufficiently recognised this fact or have provided sufficient alternatives to such linguistic study."

[1] Report of the Teachers' Guild upon the British Association Report on the Curricula of Secondary Schools. Printed in THE SCHOOL WORLD, September, 1907 (vol. ix. p. 329).

3. They join the committee in deprecating "any form of early specialisation in the education of children, and therefore regard with grave concern the fact that the entrance examinations at the great English public schools give undue prominence to the study of Latin (and Greek) in the course of education at the preparatory schools, the result being that too little time is available for (*a*) the teaching of the mother tongue, (*b*) manual training, (*c*) science and mathematics."

4. They also join in deprecating "anything like State-imposed rigidity in the organisation and studies of secondary schools."

The next conclusion of the committee opens up the question of the course of education in elementary schools. The council think that the question of the curricula of such schools should be considered in relation to secondary schools. The committee appear to have considered the curricula of secondary schools in relation to preparatory schools only, but, as probably half the number of pupils in secondary schools are drawn from public elementary schools, the correlation of these with secondary schools requires consideration.

The council, further, are of opinion that some guidance is required as to the principles upon which the division of school time laid down by the committee is based.

5. They consider that there is no evidence of overcrowding of the curriculum, but, if there is such overcrowding, some guidance is wanted as to the principles upon which the curricula of various types of schools should be based.

6. They agree with the desire of the committee "to see a great simplification in the arrangement of examinations for secondary schools," and join them in strongly recommending "that examination and teaching should go hand in hand, the examiners co-operating with the teachers and acting in conjunction with them in order to further the interests of real education."

They support the committee in urging "upon the universities and professions to accept as qualifying for entrance the leaving certificates granted by each university to the schools which submit to its inspection," agreeing that "the aim should be to examine in accordance with the teaching, and to pay special attention to the special peculiarity of each school or group of schools," as "it would be a great relief, and at once improve the teaching of the higher forms, if the results of such examination were accepted by universities and professional bodies without further entrance test."

They join them in particularly deprecating "any uniform or centrally administered examination applied to all the schools of the country. For a uniform State examination, if it were made the door of entrance to all higher courses of study and to the professions and Civil Service, would do much evil, focussing the efforts of teachers and pupils upon those parts of the school curriculum in which alone examination is possible. Further, the rivalry between schools would cause the standard of attainment steadily to rise, until the over-pressure became serious and intellectual vigour and independent thought were killed."

7. They entirely agree with the last clause in the report of the committee, which runs as follows:

"The committee feel that no scheme of secondary education can be satisfactory unless it is carried out by teachers of learning and force of character, and they would urge that every effort should be made, by conditions of appointment, by scale of salaries, and by retiring allowances, to attract a high class to the teaching profession, which should be regarded as a very laborious, but very honourable, form of public service. Prompt action in this matter is urgent and imperative; for, unless something is done without delay, the best interests of the schools, and especially of boys' day schools, will be sacrificed to a false and disastrous economy."

HISTORY AND CURRENT EVENTS.

Prince Harald, third son of the King of Denmark, was last June betrothed to Princess Helena, third daughter of Friedrich Ferdinand, Duke of Schleswig-Holstein-Sonderburg-Glücksburg. They are second cousins, for Christian IX., the late King of Denmark, was younger brother to Princess Helena's grandfather, Frederick. But what is Friedrich Ferdinand who has such a long title? These multi-barrelled names used to be common in the Holy Roman Empire and adjacent lands until the revolutions of Napoleon's time swept them nearly all away. The longer the title, the smaller the territory. Thus, in the present instance, the title means that Prince Friedrich is of the Glücksburg branch of the Sonderburg branch of the Schleswig-Holstein branch of the Royal Family of Denmark. It was the Holstein-Gottorps, another branch of the same family, who, marrying into the reigning houses of Sweden and Russia, were the occasion of northern wars in the seventeenth and eighteenth centuries. It was still another branch, the Schleswig-Holstein-Sonderburg-Augustenburgs, whose claims complicated the events of 1864–6, when Schleswig-Holstein became Prussian. Though the families still exist, they do not now trouble Europe.

Colonel Seely lately, answering questions as to the New Hebrides in the Brito-Irish House of Commons, "described their position as peculiar, for they had no Sovereign and belonged to no one." More than three thousand years ago the people of Laish were reported as "dwelling careless, quiet and secure, having no magistrate in the land, and having no dealings with any man"; and in the Hebrew book of "Judges" (xviii. 27) we read what became of them in consequence. In the sixteenth century, seven provinces that had rejected their Spanish King made many attempts to get for themselves a "magistrate," and finally found shelter under the protection of the Orange family. Whenever they tried the experiment of doing without this family, they were sooner or later invaded by a powerful neighbour, and finally they have made the family royal and hereditary. They have, like Israel of old, "a king to judge them like all the nations." What became of republics in 1815? Let the people of New Hebrides take warning!

"O Liberty! what crimes are committed in thy name!" is a saying attributed to Mme. Roland, the Girondin, in the time of the French Revolution. Certainly, logical crimes are committed frequently enough with the word "liberty." Sir Harvey Adamson is reported as saying at Simla recently, when proposing the new legislation on newspapers in India, that "the Bill was not directed against the liberty of the Press, and was in no sense a repressive measure." One wonders what such words mean. Rightly enough, we do not doubt, the law is increased against crime; but why should such increase of law be described as "not oppressive" and "not directed against liberty." Liberty is by no means always a good thing, nor is "repression" bad. But the common idea is that liberty is always good, and therefore no one must be supposed to diminish it. What they claim to diminish is "licence," *i.e.*, liberty of which we do not, probably

rightly enough, approve. "Let us pray for" lucidity of thought.

"A PATRIOTIC demonstration took place at Athens on June 11th in the form of a commemorative service for the last Greek Emperor, Constantine Palaeologus, held in the Church of S. Constantine. The poet Matsoukas recited a poem on the revival of the wounded Hellenic Imperial eagle." The Emperor Constantine died in 1453, vainly defending the city of Constantinople against the Turks. That event is generally held to have ended the eastern part of the Roman Empire, is the theme of Gibbon's last chapters, and has an importance in the economic, literary, and ecclesiastical history of Europe. But why "Greek" Emperor? and, if so, who was the first "Greek Emperor"? Why "Hellenic"? and what claim have the modern subjects of King George (who rules at Athens) to call themselves "Hellenes," or to identify themselves with the Romaioi of fifteenth-century Constantinople? And, finally, has the "Imperial eagle" revived? if so, when? or is the event in the future? and, if so, what form will it take? Do the Greeks want "to take Constantinople"? and, if so, is it the Greek Church (including Russia) or the Greek people that is to do it? The answers to these questions would make a good lesson for the upper forms.

ITEMS OF INTEREST.

GENERAL.

THE regulations for training colleges issued in 1907 conflicted with the trust deeds of many residential training colleges. These trust deeds specify that the students in residence should be members of the Church of England, and the regulations ordered that no inquiries concerning religious belief should be made of the applicants for admission. As the general question of elementary education is not yet settled, and as students are to be admitted for a two years' course in September next, the Bishop of St. Albans, on behalf of the Church of England training colleges, approached Mr. Runiciman with a view to compromise. The colleges suggested that they shall not be bound to offer the facility of a "conscience clause" to more than 50 per cent. of the vacant places this year, but up to that number anyone on the list of registered candidates (qualified educationally for admission), not being a member of the Church of England, shall have the benefit of the conscience clause. This, Mr. Runciman admits, is practically the plan discussed between the Archbishop of Canterbury and himself, which results in half the places vacant in September next being secured without denominational tests. The President of the Board of Education has agreed to this temporary *modus vivendi*, and has issued a circular modifying article 8 of the regulations, which will carry out this arrangement. The amendment proposes that in the selection of candidates for half the number of places which will be vacant in 1908, the authorities of a college may not reject the application of any candidate, not belonging to the denomination of the college, on the ground of religious faith or by reason of his refusal to undertake to attend or abstain from attending any place of religious worship or any religious observance or instruction in religious subjects in the college or elsewhere.

IN a prefatory memorandum to the new regulations for the training of teachers for elementary schools, Sir Robert Morant outlines the chief changes in this important department of the work of the Board of Education. After referring to the improved general education of a teacher, the necessity for a special professional training is fully dealt with in view of the fact that many students now admitted to a training college have had no previous practice in elementary schools. The period of practice spent in class teaching is recommended to extend over two months instead of six weeks as at present. With regard to hygiene and physical exercises, the Board has no doubt that these subjects should be compulsory, without exception, for all persons passing through a course specially subsidised by the Exchequer for the express purpose of providing professional training which will enable them to become efficient teachers for elementary schools. Consequently, a new syllabus of hygiene of a comprehensive though elementary nature is included in the regulations, and the necessity for the development of a "health conscience" as a necessary part of the equipment of a good teacher is insisted upon. Special importance is paid to the necessity of increasing competence in physical exercises, and it is stated that there is hardly any part of the professional training of elementary-school teachers more essential than that which will enable them to supervise the physical development of the children in their care. In future the headship of women's colleges will be filled by the appointment of women, for the Board recognises that there are capable women who can undertake such responsibilities. We are pleased to find that reference is again made to the fact that the scientific spirit should be provoked by the manner in which the subjects of instruction inside the training colleges are dealt with, and we cannot read the memorandum without feeling that Sir Robert Morant and his colleagues realise very fully the responsibility in which the training of teachers involves them.

THE Board of Education has issued a circular (590) concerning the returns of pupils and staffs in English secondary schools. It is pointed out that the time has now come to take a wider survey of what has been done and of what remains to be done, and to analyse in some detail certain important aspects of English secondary education, such as the number of pupils of various ages receiving their education in secondary schools, the occupations of their parents and the careers to which their education serves as an avenue, the extent to which the length of their school life is sufficient to secure that the cost and pains which that education entails shall not be wasted, and the number and qualifications of the teachers by whom the schools are staffed. The Board is anxious that the burden involved in the compilation of such statistics should as far as possible be minimised. With a view both to securing uniformity and to effecting a general improvement of the statistics at the cost of as little labour as possible to those concerned, the Board has come to the conclusions (*a*) that it will be a generally convenient arrangement for all English educational, as distinct from financial, statistics to be taken for the normal school year running from August to July; (*b*) that age limits and classifications by age should ordinarily be established with reference to age on July 31st; and (*c*) that where it is desirable that anything of the nature of a census of pupils upon a single day should be taken, the day chosen should be October 1st, which is in any event one of the days on which the number of pupils must be calculated for the purposes of grant under the regulations for secondary schools.

THE Board proposes to make a substantial contribution to the lightening of the burden by limiting the demand for returns, so far as the statistics of pupils and staffs now immediately under consideration are concerned, to the raw material of facts upon which the statistics will be based, and by undertaking at Whitehall the whole of the very heavy labour of abstracting and tabulating these facts in a statistical form. It is anticipated that the more com-

plete information now to be obtained from year to year will dispense with nearly all the heavy returns which now have to be asked for upon the occasion of a full inspection. All secondary schools upon the grant list in England will, therefore, be furnished, in addition to class registers of attendance now supplied, with two other registers—one an admission register to be kept as an official record; the other will contain particulars with regard to the members of the school staff. The registers will shortly be ready for issue, and the Board will request that the staff registers may at once be opened by the entry upon them of particulars with regard to all masters and mistresses at the schools during any part of the twelve months between August 1st, 1907, and July 31st, 1908, and that they may be returned to the office of the Board before, or as soon as possible after, the end of the summer term. The Board will not, however, ask that the admission registers should be brought into use until the school year 1908–9.

On July 10th the administrative staff of the technological branch of the Board of Education was removed from South Kensington to the new offices of the Board in Westminster, the entrance to which is in Charles Street, out of Parliament Street. All correspondence should be directed to the Secretary, Board of Education, Whitehall, with the exception of letters for the Victoria and Albert Museum, the Royal College of Art, and the Solar Physics Observatory, which should continue to be addressed to the Offices of the Board of Education, South Kensington.

The Board of Education took advantage of the visit of the team of Swedish gymnasts to this country, in connection with the Olympic Games, to invite them to give a private demonstration of Swedish educational gymnastics. The team, under the direction of Colonel Viktor Balck, director of the Royal Central Gymnastic Institute of Sweden, gave practical demonstrations of the more important principles of their system at the Royal Horticultural Hall, Westminster, on July 8th. The programme was designed to assist English educational needs, and comprised: (*a*) free-standing exercises suitable for children in public elementary schools, and similar in character to those contained in the official syllabus of physical exercises; (*b*) free-standing exercises suitable for students at training colleges, or for the higher classes of secondary schools; (*c*) advanced exercises freely interspersed with Swedish apparatus work. The display proved of great interest and assistance, and should help in improving and developing the work of physical training in English schools and training colleges.

The autumn general meeting of the Association of Assistant-masters will be held at the Mathematical School, Rochester, September 10th. In the morning an address will be given by Mr. R. F. Cholmeley, the chairman of the association, on the work of the year. Two resolutions will be submitted to the meeting: (1) That this association thanks his Majesty's Government for the Bill providing greater security of tenure for assistant-masters in endowed schools, and hopes that the Bill will be passed with the least possible delay. (2) That this association expresses its gratitude to the Incorporated Association of Headmasters for most effective co-operation in endeavouring to obtain greater security of tenure for assistant-masters in secondary schools. Resolutions passed by the council with regard to regulations for secondary schools, 1908, will probably be submitted also. In the afternoon a paper will be read by Mr. C. Bird, headmaster of the Mathematical School, Rochester, on the financial position of the assistant-master. A discussion on leaving certificates will be opened by the honorary secretary, Mr. J. Whitehead, of Berkhamsted School.

In consequence of representations which have been received by them, the Oxford Delegates of Local Examinations have resolved to hold during the week March 15th–20th, 1909, a Senior and a Junior Local examination. The subjects will be the same as those for the corresponding July examinations in that year. (A Preliminary examination will be held in July only.) The time-tables for the March examination will correspond with those for the July examination. Senior and junior candidates will not be eligible for honours or distinction if born before March 1st, 1890 or 1893 respectively. Entries close at noon on January 26th. It is expected that the results of the examination will be issued not later than April 30th, 1909.

Among the more important changes announced in the regulations for 1909 of the Cambridge Local Examinations are the following: senior and junior candidates will not be awarded a certificate unless they pass in English or another language, ancient or modern; fresh schedules for chemistry are issued; senior and junior candidates will be allowed to take unprepared translation in Latin and Greek as an alternative to set books. Spoken French and German will be included in the subjects for the preliminary examination, as well as the examination of senior and junior candidates. In response to a request received by the Syndicate from Natal and the Transvaal, Dutch will form a subject for the junior as well as the senior examination.

The programme of the proceedings of the third International Art Congress, to be held at the University of London from August 3rd to 8th, gives an abstract of each of the forty-five papers which are to be read and discussed during the session. Amongst papers having a distinct bearing on the work of public and secondary schools may be mentioned; "School Pictures," by Miss E. P. Hughes; "Memory Drawing," by Herr Rector P. Seinig, Charlottenburg; "Training of Sense of Colour," by Mr. A. Millar; "Training of Drawing Teachers for Secondary Schools," by Prof. Nadler; "Drawing in the Army," by Mr. Henry Hudson; "The Art Education of Young Children," by Mr. E. Cooke; "Drawing in Secondary Schools," by Herr Graf. The congress exhibition of drawings will be held in the galleries of the Victoria and Albert Museum until about August 22nd. It is an exhibition of systems rather than of individual work, and is intended to illustrate the various schemes of instruction adopted by various nations, as shown by the actual results of the teaching typified by the schemes in question. An interesting feature of the exhibition is the exhibit from the Ecole des Beaux Arts, Paris. A publishers' and trade exhibition will be held in connection with the congress, and a series of excursions and receptions have been arranged for the entertainment of the foreign members. It is expected that the conference will be numerously attended, delegates and representatives having been appointed from upwards of twenty foreign countries, as well as from most of the universities, public bodies, and education authorities in the United Kingdom.

Courses of lectures on education, specially designed for schoolmasters and schoolmistresses, will be held from August 14th to 21st at the Cambridge Training College for Women Teachers. The inaugural lecture will be given on August 14th by Sir James Crichton Brown, on "Right- and Left-handed Education." The proposed courses of lectures include "Applications of Psychology to Education," by Prof.

James Ward; "Teaching of Geography," by Mr. H. Yule Oldham; "History of Education in Relation to Modern Educational Problems," by Mr. J. E. G. de Montmorency; "Modern Methods in the Teaching of Mathematics," by Miss Mullock; and "Problems of School Management," by the principal of the Cambridge Training College for Women. Accommodation for a certain number of students can be provided at the Cambridge Training College at a cost of 30*s.* a week, or 25*s.* for those sharing a room. Early application for rooms should be made to the principal.

THE sixth year of an attractive holiday course will be opened at Salzburg—the beautiful surroundings of which are widely known—on September 1st. The lectures in the two groups of literary and scientific subjects in each of the two weeks of the course include a number by distinguished professors from Germany and elsewhere. The centre and the course should appeal to many who desire to become familiar with spoken German in an inspiring atmosphere. Particulars can be obtained from Prof. Dr. Zd. Skraup, Vienna.

THE educational section of the Hungarian Exhibition at Earl's Court enables a visitor to obtain an excellent idea of the Hungarian system of education. But students of education who are unable to visit the exhibition may still study the history and development of education in Hungary with very little trouble. The president of the educational section of the exhibition, Dr. Béla Erödi, chief inspector of secondary schools at Budapest, is willing to send post free to those who make application for them a volume of some 258 pages on "Education in Hungary" and a number of pamphlets on various departments of the Hungarian system. "Education in Hungary" is full of interesting facts. In the school year 1905–6 there were in Hungary 202 secondary schools, of which 170 were classical and 32 modern schools. Of the former, 132 provided the full course of eight classes; and of the latter, 25. In other words, there is one secondary school to 78,000 inhabitants; but there is one classical school only to every 93,000 inhabitants, and one modern school to 472,900 inhabitants. After successfully passing the eighth class of the secondary school, the pupil proceeds to his final examination; to pass this examination is for the boy from the classical school to have the right to enter the university; but the modern school pupil can claim the right of entry only to the polytechnic, mining, forestry, and agricultural high school.

THE educational exhibits at the annual meetings of the Royal Agricultural Show are becoming increasingly important. A special building was set apart for education at Newcastle this year. Just outside it was a most instructive forestry exhibit by the Duke of Northumberland. Little plots of land with real trees were made to show samples of Scotch fir forest at various ages of growth, and to exemplify the effect of shady overgrowth on the heather and bilberry undergrowth. The Meteorological Office had an interesting indoor exhibit and a climatological station outside, where Mr. William Marriott arranged to lecture daily on meteorology in relation to agriculture. Glass bee-hives and lectures on bees were another attraction. That most instructive new sundial the heliochronometer appeared twice—as an instrument for supplying local mean time to meteorologists, and also as a garden ornament among the shrubberies and pedestals. Indoors the exhibits were chiefly from the Armstrong College and the County Councils Association; the Hancock Museum was also represented by exhibits from the Northumbrian coast. Several departments of the Armstrong College contributed. The botanical department showed Prof. and Mrs. Potter's work on plant diseases, also culture solutions. The chemical department showed butter testing. The agricultural department brought thick sods from the farm to show the results of experiments with magnesium oxide and ammonia manures. The County of Northumberland Education Committee presented their "Guide to Experiments for 1908," by Prof. D. A. Gilchrist, director on behalf of Armstrong College. Arrangements could be made to visit the farm. The County Councils Association had organised exhibits illustrating rural educational work from the counties of Northumberland, Durham, Cumberland, and Westmorland. These exhibits were most encouraging as showing how simple outdoor observational and practical work is now taking hold in the small country schools. Of secondary schools the North-eastern County School at Barnard Castle was conspicuous for the work done by the agricultural class in its upper school. The Board of Agriculture and Fisheries had a pavilion where their excellent gratuitous "leaflets" could be obtained. Their recently published "Agricultural Instruction provided by County Councils in England and Wales in 1906–7" makes possible some statistical comparison between the work of different counties. It may not be fair to compare this educational exhibit with greater exhibitions held in London. But none the less the Royal Agricultural Show in its annual migrations is deservedly reckoned as one of the educational forces of the country.

MUCH valuable information as to the cost of secondary education for girls is contained in a pamphlet issued by the Association of Headmistresses, and obtainable at the Educational Supply Association for 3*d.* The pamphlet is really a revised edition of publications previously issued by the association, and reprinted in THE SCHOOL WORLD in February and July, 1905, but there are many new points in it. As to salaries of assistant-mistresses possessing a university degree or its equivalent, it is held that the lowest should be £120 a year, rising automatically to £180, and for senior mistresses to £220. The average of the salaries of assistant-mistresses in a school should not be lower than £160. For non-resident headmistresses the lowest salary which should be paid is put at £300 a year. For a school of 200 pupils, the minimum salary for a headmistress should be £400; for one with 300 pupils, £600; and for a school of 400 pupils, £700. In a school of 100 pupils, the total salaries of teachers would thus work out at £15 16*s.* or £14 4*s.* per pupil, according to the type of school; while in schools of 200, 300, and 400 pupils the cost for salaries would be £11 12*s.*, £10 10*s.* 8*d.*, and £9 15*s.* respectively, in each case twenty pupils being allowed for each full-time teacher.

As to the cost of building, equipment, and maintenance of secondary schools for girls, it appears that in London the present cost per pupil for the building alone is probably more than £50, exclusive of the cost of site and of enclosing the playground, but inclusive of heating, lighting, and drainage work. The expenditure may be reduced to £42 per pupil or may rise to £100 or more. A rough estimate of the cost of furniture, both general and special, is from about £4 to £6 per pupil. We should like to be provided with similar particulars of yearly expenditure upon buildings, equipment, apparatus, administration, and other working expenses, in order to be able to say what is roughly the cost per pupil of maintaining an efficient secondary school for girls. For a school of 200 pupils, the annual cost for salaries of the headmistress and ten

assistants, plus portions of time equivalent to two more, is placed at £11 12s. It would be interesting to know the sum which should be added to this in order to arrive at the total cost of maintenance per pupil in a school of this size and character. The annual cost is sometimes stated to be £14 per pupil in a girls' secondary school, but the figures given by the Association of Headmistresses suggest that this is too low. Perhaps some of our readers will supplement the information with statements of their own knowledge of school expenditure.

On the results of the first annual examination in German held on March 26th, 1908, by the London Branch of the Allgemeiner deutscher Sprachverein, a travelling scholarship of ten guineas has been awarded to J. W. Roberts, of the Manchester Grammar School.

An exhibition of drawings and examples of applied art work, selected from the work sent in competition for the various art scholarships annually awarded by the London County Council, was held in the new Central School of Arts and Crafts, Southampton Row, London, on July 3rd and 4th. The exhibits comprised upwards of twenty branches of the artistic crafts, ranging from a diamond pendant to a carved stone balustrade, and were arranged according to subjects. The name and school of the competing student were not in all cases stated on the work, nor was there any indication of the nature and value of the scholarship awarded, though such information would have added considerably to the interest of the exhibition. Although practical work naturally predominated, there was also shown a considerable number of designs, museum and nature studies, life and costume sketches, and drawings of architectural details, much of which gave evidence of sound and conscientious work. The bookbinding, writing, and typography section was a most striking feature, and included many charming examples, notably a copy on vellum of Milton's "Lycidas" in gold and black letters with a decorative border. Cabinet-making was also well represented, together with much excellent work in wood-carving, inlay, jewellery, metal-work, stained glass, heraldic-engraving, embroidery, &c. It was noteworthy that the exhibitors were in all cases apprentices and learners of the various crafts represented. The exhibition was a valuable indication of the variety and scope of the work done at the Central School and at the allied institutions, and of the manner in which the young art workers in London are availing themselves of the advantages afforded by these scholarships and exhibitions.

For more than twenty years the primary-school teachers of New Zealand have had a properly organised union, the New Zealand Educational Institute. This association consists of a number of local branches which send delegates to an annual meeting of the council held at various places throughout the Dominion. As the direct result of the activities of this body, many ameliorations in the lot of the primary-school teachers have been secured, notably (*a*) security of tenure, (*b*) superannuation, (*c*) a colonial scale of staffs and salaries. The benefits of superannuation have been extended to secondary-school teachers as well. But for the last twelve years no meeting or conference of teachers in secondary schools has taken place. At last, however, the Secondary Schools Conference has been resuscitated, and a very helpful and important meeting lasting over several days has been held at Christchurch. It is hoped that future meetings will be held regularly at Christchurch and Wellington alternately. A glance at the map will show the reason for this geographical distribution.

Among the subjects discussed at the Christchurch conference was the perennial topic of the teaching of grammar. The primary-school syllabus has been altered several times during the last few years, and grammar, of which a very extensive knowledge was required, has been brought to the irreducible minimum. As a matter of fact, it has almost disappeared; and it is frequently found that pupils on their admission to the secondary schools know nothing whatever of the subject. This, of course, leads to a great waste of time when a foreign language is first attacked. The conference decided that the teaching of a certain amount of formal grammar is necessary, but it is to be regarded strictly as a means and not as an end. It is hoped that the unanimity of the conference on this matter will persuade the Education Department to effect improvements in this direction. At the same meeting it was resolved that it is absurd to include in the junior university scholarship anything in the shape of philology beyond a mere outline of the history of English. No voice could be heard in defence of questions on Grimm's or Verner's laws. The feeling seemed to be that some knowledge of literature, facility of expression, and a minimum of language are all that are necessary. The conference was decidedly against the introduction of set books in any language.

The second annual congress of the Playground Association of America will be held in New York City on September 8th to 12th of this year. Among the speakers will be many well-known American educationists. The Mayor of the City of New York has consented to serve as honorary president, and prominent people from all parts of the country will act as officials. The congress will in every possible way try to arouse a strong public sentiment toward the further progress of the playground movement.

. Several articles of interest to science teachers appear in the June number of *School Science and Mathematics*. Mr. H. N. McCoy discusses the experimental basis of chemical formulæ and the teaching of the atomic-molecular hypothesis. He considers it preferable to teach the significance and use of formulæ without, at first, any reference to the hypothesis, and a detailed statement is given of a method of presenting the subject before a class of students. Mr. Rendtorff describes the use of a simple telescope in determining the constants of mirrors and lenses, refractive indices, and the wave-length of light; and Mr. G. N. Lewis contributes a lecture on the "ionic theory," in which the subject is treated in a popular and attractive manner. Teachers of mathematics, geology, or of botany will find in this publication articles which are of much interest. The following problem is given on the page devoted to science questions: "A steel spring is wound up. It is then dissolved in acid. What becomes of the energy which the spring is supposed to possess on account of its tension?"

SCOTTISH.

The long fight of Scottish teachers for reasonable security of tenure has at last proved successful. The Scottish Grand Committee, with a unanimity that was as remarkable as it was gratifying, agreed to a clause granting as much security of tenure as teachers have ever contended for. As this clause has special interest for English teachers, its terms are here given in full. Parenthetically it may be hoped that Earl Beauchamp's Endowed Schools (Masters) Bill will have an equally successful issue. "If at any time within six weeks after the adoption of a resolution for the dismissal of a teacher in terms of section three of the Public Schools (Scotland) Teachers Act, 1882,

a petition shall be presented to the Department by the said teacher praying for an inquiry into the reasons for the dismissal, the Department shall make such inquiry as they see fit, and if as the result of such inquiry they are of opinion that the dismissal is not reasonably justifiable they shall communicate such inquiry to the school board with a view to reconsideration of the resolution, and in the event of the school board not departing from the resolution within six weeks thereafter may attach to the resolution the condition that the school board shall pay to the teacher such sum not exceeding one year's salary as the Department may determine; and any sum so determined may be recovered by the teacher as a debt from the school board: Provided that nothing herein contained shall affect the power of a school board summarily to suspend any teacher from the performance of his duties."

THE Education (Scotland) Bill continues to make progress, but only very slowly. As Mr. Cochrane, M.P., declared, "A case for prosecution cannot be made against the Committee for exceeding the speed limit in legislation." Still, progress is being made, and before the House rises for the autumn recess, the Bill should have passed all its stages in the House of Commons. Two questions have led to prolonged debate and a good deal of angry feeling. The basis of allocating the Education (Scotland) Fund was materially altered, greatly to the loss of certain districts. The members for these districts pleaded hard and long for the original proposals, but the Secretary for Scotland stood by his amended clause, which was carried by a small majority. School boards throughout Scotland have been greatly concerned at the new proposals in regard to the auditing of accounts, whereby the members are made personally responsible for any unapproved charges. The Secretary for Scotland might well have given way on this point. He justified his attitude by referring to the scandals in municipal accounts in Mile End and other places. The members of the leading school boards lodged a dignified protest against any such comparison, and the feeling of resentment is so strong that there is talk of a general resignation of all school board members.

DR. SCOUGAL'S annual report on the schools in the southern division contains some very valuable suggestions and criticisms. The question of the feeding and medical inspection of school children receives much attention. Some of Dr. Scougal's assistants express disappointment at the arrangements, or rather the want of arrangements, made for dealing in a systematic manner with the feeding of children. Such provision as is made depends entirely on private initiative, and any success that is obtained is mainly due to the solicitude of the teacher. While it is pleasing to find inspectors interested in so necessary a reform, they might temper their indignation against school boards by reflecting on the number of years they themselves have been silent on this subject. The question of feeding is no more clamant to-day than it has been for the past twenty years. Yet during all that time inspectors have refrained from pressing the question on public attention. They are now only taking it up because it has been forced to the front by other observers. Except in Edinburgh and in Fifeshire, medical inspection has hardly been attempted. It is to Dunfermline, according to Dr. Scougal, that one must look for an ideal system. There, thanks to the Carnegie Trust, medical inspection on the most thorough and scientific basis has been going on for years.

THE question of regularity of attendance again receives considerable attention. There has been a tendency in recent reports to set too high a standard of regularity. Considering the age of a large percentage of the pupils, the inclement weather for some months in the year, and the distances many children have to travel to school, it seems impossible to hope for an average attendance for the whole of Scotland much over 86 per cent. This year's report recognises that it would be probably unwise to press for greater regularity than 90 per cent. in the higher classes and considerably less in the lower. Mr. Jamieson, the inspector for the Edinburgh district, has very sane views on this whole subject, and his remarks might very well be issued as a special leaflet to school boards, managers, and teachers.

DR. SCOUGAL reports that for the year 1906–7 the number of students in training was 2,195. Of these 534 were men and 1,661 women. This marks an increase of 473 on the previous year. This increase is mainly due to the operation of the new training regulations and to the opening of a new training centre at Dundee. It is gratifying to find that the number of students remaining for a third year of study is steadily increasing. The fact that eighty-eight certificated but untrained acting teachers were admitted to a year's course of special training is another satisfactory feature, and justifies the hope expressed in the report that ere long "every teacher in a Scottish school shall be thoroughly trained for the work he is to undertake."

THE Higher Education Committee of the Educational Institute of Scotland has had under consideration the Department's action on the question of the registration of teachers. The institute has all along opposed the formation of the proposed register on the ground that it is *ultra vires*, and could only be established by Act of Parliament. The institute would, however, have given a favourable consideration to any well-devised scheme for securing that teachers in every grade of school were adequately equipped for their work. The higher education committee is of opinion that the present action of the Department in this matter has created endless anomalies and done patent injustice to many teachers. The committee has accordingly issued a circular to all teachers in secondary schools asking particulars of their qualifications and status, and the recognition granted them by the Department. When these have been returned the committee proposes again to approach the educational authorities on the subject.

THE results of the intermediate and leaving-certificate examinations are now to hand. The change of date from June to Easter was urged by the Department on two grounds. Teachers and pupils would be sent away for the holidays freed from the suspense of waiting for the results, as these were to be issued before the vacations began. Possibly because this was the first year of the new order of things, many schools were closed before the full results were made known. The other reason given for the change was that it would allow of the oral examination coming after the written examination, and so of correcting or confirming its judgment. In the great majority of cases this has not been done, and in no instance that we know of has any attempt been made to consider the verdict of the written examination in the light of a subsequent oral test. This is an extremely unfortunate outcome of the Department's promises, and if there is no improvement by another session, there will be a strong movement for a return to the former condition of things.

IRISH.

The vice-president of the Department of Agriculture and Technical Instruction in his annual address naturally congratulated the country that the Department's system of instruction in experimental science and drawing is now firmly established in the secondary schools. The programme is now in operation in 289 schools, and instruction given to more than 15,000 students. The total grant paid by the Department for that teaching was, for the session 1906–7, £27,400, an increase of £6,050 on the previous year, and this was provided entirely from the annual Parliamentary vote. Technical schools were provided for differently, viz., out of the endowment of the Department, the cash value of whose securities is now £353,290. There are altogether 128 technical schools in the country with 25,000 students. There are also 60 itinerant teachers of domestic economy, and 45 itinerant teachers of manual instruction. These give about 650 separate courses of instruction during the year to some 20,000 students. The sums spent out of the endowment amount to £124,209, including £54,939 in the six county boroughs, £22,119 in urban and rural districts, and £12,851 for extension of special schemes of technical instruction.

The Department is still extending its work in various new directions. For example, it announces a new scheme of industrial scholarships to be awarded this August. These will be six in number, of the value of £80 each for one year, and renewable for a second or third year. They will be awarded to persons already engaged in one of the higher branches of such industries as the woollen, linen, leathern, and tanning, and are intended to provide training for their management in Ireland. Mr. Russell has also announced a scheme for the immediate extension of agricultural colleges throughout Ireland. There are three of these already in existence, and the Department has allocated £50,000 for the erection of new schools, the localities guaranteeing the cost of maintenance. These will be distributed in North-west Ulster, in East Ulster, in Munster, in Connaught, and in Leinster. These schools were intended to train Irish farmers for Ireland, and, it was hoped, would do away with the necessity for itinerant instructors.

Mr. Birrell has at last announced the amount and method of allocation of his promised grant to primary education. It was understood the amount would be more than £100,000; the actual figure is £114,000. £100,000 will be paid as a capitation grant to teachers whose average attendance is not less than thirty-five, and the remaining £14,000 to the teachers whose average attendance is more than seventy. The great difficulty in Irish primary education is the large number of small schools, and the number of schools which will not partake in the benefit of the grant on account of smallness of number is said to be nearly three thousand. This, of course, will give rise to some unpleasantness, but at the same time Mr. Birrell cannot be accused of not keeping his promise to do something for the Irish primary-school teacher. It has also been pointed out that the grant to Scotland from Imperial sources is still half a million larger than that to Ireland, although the number of pupils in primary schools is about the same.

Mr. Birrell is also certain now of achieving his great success in passing his University Bill. It has passed through the Grand Committee stage with slight alterations, and Mr. Asquith has announced that it will be passed through both Lords and Commons before Parliament rises for the summer vacation.

Other signs of educational progress are manifest this summer. A Roman Catholic training college is being established in Dublin for the training of women as secondary-school and university teachers. This is the first college of the kind for Roman Catholics in Dublin, but there is already one established in Waterford. At the Alexandra College in Dublin, where there is already a department for training secondary-school teachers, a new department is being inaugurated with a course of scientific instruction in hygiene for lady factory inspectors, sanitary inspectors, and teachers of hygiene. This new department is to be worked in connection with Trinity College and the Department. A new branch of the Teachers' Guild has also been established in Cork, called "The Cork and Munster Branch" for the improvement and advancement of the teaching profession in Ireland.

WELSH.

The suggestion referred to last month that the county authorities should hand over the award of their own county exhibitions to the Central Welsh Board, so that they should become national scholarships, has not met with universal approval. Principal Sir Harry Reichel has expressed his grave doubt whether such a change would be to the educational advantage of Wales. It would give, he said, a great advantage to the wealthy districts, which are able to pay higher salaries and have more expensive equipment. The whole of school life would become one long coaching for these national prizes, and when it comes to coaching, the longest purse usually wins. If one has to choose between town and country, it is his experience that in Wales, as in Scotland, the strongest minds —as well as the strongest bodies—on the whole, are produced in the country. A system, therefore, which would tend to give an undue proportion of scholarships to the comparatively rich town schools in that respect would operate against the national interest.

The annual tours of the Glamorgan students attending evening classes were arranged for July. The programme issued by the education committee gave interesting details of the ground to be covered by each group of students. Second-stage men began at home and investigated the condition of things prevailing in the South Wales coalfield; third-stage students went further afield and reported upon Lancashire, Derbyshire, Somerset, and Cornwall matters; whilst the senior students visited the further coalfields. The rules governing the conduct of students whilst on tour are very stringent, and no man receives his scholarship unless he attains a very high standard of efficiency in his work. Each student is required, on his return, to prepare a paper descriptive of his tour for the nearest federation branch or mining class.

Sir T. Marchant Williams this year delivered the address to the outgoing students of the Swansea Training College for Women Teachers. Referring to a speech of Bishop Owen at Carmarthen Training College, he entered a protest against the idea "that teachers, of all people in the world, should cast away the pecuniary aspect of their calling, and compensate themselves by magnifying the importance of their profession. He had never been able to see why a teacher should not go into the market and claim the highest price he could get for his services." Sir Marchant Williams has himself been an elementary-school teacher, and told the Swansea students that on

leaving college he " was set down in the wilds of Anglesey with twenty-one pupils and twenty-four panes of glass broken."

THE idea of education is widening. The curriculum laid down by the Code is felt by education authorities not to be entirely inclusive. An interesting instance is supplied by the Holywell Sub-Committee of the Flintshire Education Committee. A report was received stating that on a certain day the attendance at one of the schools was very much reduced on account of a large number of the children attending a musical festival. In past years the managers of the school have given a holiday on the occasion, but recently decided not to do so again unless the festival is one affecting the whole village. It was argued, in the discussion of the report, that a musical festival is a source of education even superior to school work, that it is not only a treat, but an education in itself, and makes the pupils all the better scholars, and that such a holiday is fully justifiable if it is made a condition that all go to the festival.

THE following provisions are announced as forthcoming in the new Welsh Code. The curriculum should, as a rule, include the Welsh language, the teaching of which should follow generally the lines indicated in article 2 (i). Any of the subjects of the curriculum may (where the local circumstances make it desirable) be taught in Welsh, but it is not necessary that the Welsh language should be taught in every school or in every class. Where Welsh is the mother tongue of the infants, that language should be the medium of instruction in their classes. Provision should also be made for the teaching in every school of Welsh history and the geography of Wales, and Welsh literature should also be included in the curriculum of higher elementary schools. It is hoped that the teaching of handicraft will become more universal in Wales, and the Board is glad to notice that manual workrooms are increasing in number. In some counties there is a commendable practice of placing the manual workrooms of the secondary schools, where such a course is convenient, at the disposal of the elementary schools for the teaching of handicraft and housecraft.

RECENT SCHOOL BOOKS AND APPARATUS.

Classics.

A Book of Greek Verse. By W. Headlam. xxiv+310 pp. (Cambridge University Press.) 6*s.* net.—In this book Dr. Headlam discusses the principles of translation, and exemplifies it by specimens of translations into English and into Greek. He has translated in many instances Greek pieces, which are then made to serve as models for the rendering of similar pieces of English verse. To these he has added some long choral odes from the dramatists, rendered into English, and a number of epigrams; a few notes complete the volume. The lover of Greek verse will find plenty to enjoy in this volume; it is extremely clever, and the pieces read like original compositions in Greek. The English verse is, in our opinion, less successful, and we fear the English reader will not get a fair idea of Greek poetry from them. But that seems to be inevitable. We add one or two specimens. The most successful of the English verse seem to be those choric pieces in which Dr. Headlam is content with short lines and quiet rhythms; but the quicker feet are used with some success in the version of " Antigone " πολλὰ τὰ δεινά:

" There are marvellous wonders many
Where'er this world we scan,
Yet among them nowhere any
So great a marvel as Man.
To the white sea's uttermost verges
Afloat this miracle goes,
Forging through thundering surges
When the wintry south wind blows:—
And the Earth, heaven's mother, divinest-born,
The eternal, deathless, unoutworn,
Still plied with an endless to-and-fro
As the yearly ploughshares furrowing go,
By Man is fretted and torn.

And here is a translation of " God Save the King " as a skolion:

ὦ Ζεῦ, τῆσδ' ἐπίδοις ἄνακτα χώρας
εὐαίωνά τε καὶ μεγιστόνικον,
θεότιμον ἴσχοντα κράτος
τῶνδε φίλων πολιτῶν πολὺν ἐς χρόνον.

ἐχθρῶν μὲν κατάβαλλε φῦλ' ἀναστὰς
αὐταῖς ταῖς κακομηχάνοισι πείραις,
ἐπὶ τοῦδε δ' ὁρμοῦσαν ὁρῶν
ἡμετέραν ἔτ' ὀρθὴν ἐφέποις πόλιν.

ἐσθλῶν τῶν παρὰ σοῦ τὰ λῷστα δοίης
πρόφρων τῷδ', ἵν' ἔχοι νιν ὦδ' ἐσαιεὶ
πατρίους φυλάσσοντα νόμους
εὐλογία δικαίως ἀπὸ καρδίας.

The spirit of the piece is very happily caught, and the choice of metre admirable.

Livy, Book I. and Selections from Books II.–X. By W. Denison. xxviii+344 pp. (New York: The Macmillan Company.) 3*s.* 6*d.*—This book is one of a new series of classical texts, and therefore our criticism must begin with the type and general appearance of the book. Publishers do not know or do not care, and teachers do not understand, the importance of type, paper, and setting. The eyes of young readers are easily injured, but the fact easily escapes notice, since there is a general belief that they can stand anything. Very few school books exist that are restful to the eye, and most fail in one particular—lack of margin. A good margin and lines not too long are absolutely essential. This book has hardly any margin, and to read it tries the eyes in spite of good type; the paper also being shiny is objectionable. We hope that the publishers may see their way to mend these faults in the others of this series.

The selection of matter in this book is good: we have before us the history of the kings, together with sixteen later episodes: Horatius, Lake Regillus, the Plebeian secession, Cincinnatus, the Decemvirs, Veii, the Gauls in Rome, the Licinian-Sextian laws, scenic plays, M. Curtius, the Latin War, the Caudine Forks, Lex Ogulnia and Lex Valeria, Sentinum, the Census of 293. The introduction, as usual, contains a life of Livy, with remarks on his style and sources, and a short list of books for study. The notes are not directed to the sole proper aim of notes, that is, to give help when it would be impossible or unprofitable for the learner to do without: there is a little unnecessary learning, and some mischievous help. The metrical note, for example, on p. 205, *facturum . . . sim*, distracts attention at the outset from the matter in hand.

Another distraction occurs on p. 216, where, for no particular reason, some general hints are given as to how not to translate. Mischievous we regard all help which supplies what a reader ought to know, and in a less degree that which might be extracted by question: such is the explanation of causal subjunctive (p. 205), ablative of cause (p. 211), and most of the translation that is freely given here. On the other hand, a few real difficulties are passed over: such are the famous *condendam* in the preface (p. 206), which is only paraphrased, and the characteristic use of prepositional phrases for adjectives, which ought to be discussed in the pages on style: the English boy needs to be specially warned against this idiom, which he always abuses if left to himself. Suggestions of passages for parallel reading are given occasionally: a good idea.

Finally, there is an Index Nominum, where to our horror we find elaborate directions for pronouncing the Latin names like English words! How on earth do they pronounce Latin in America? If as English, why these directions? If as Latin, why spoil all by a reversion?

Three Tragedies of Seneca: Hercules Furens, Troades, Medea. Edited by H. M. Kingery. xii+312 pp. (Same publishers.) 3*s.*—This book, another of the same series, has the important advantage over the last, being in verse, that an ample margin is left to the page. The relief to the eye is enormous. The subject also is unhackneyed, and yet important. Not that Seneca's tragedies are likely to be much read for their own sake; but as predecessors of the modern drama, and as instructive parallels to Euripides, they have a literary importance not their own. We look with greater indulgence on notes to a book of this type than we do in other cases; but even here there is too much that is unnecessary at the least. There is a great deal of translation, even of easy phrases, and a great deal which saves trouble that the student ought to take—the trouble of thinking. The notes take 160 pages of small print to about 110 pages of text in large print. But the book is likely to be useful.

The Suppliant Maidens, The Persians, The Seven against Thebes, The Prometheus Bound of Aeschylus. Translated into English verse by E. D. A. Morshead. xx+216 pp. (Macmillan.) 2*s.* 6*d.* net.—Mr. Morshead's version of the Oresteian Trilogy has become a classic amongst translations: and he has now finished the other plays of the poet. His hand has not lost its cunning. Of course, the choral odes present the chief difficulty to the translator: and his first question must be, to rhyme or not to rhyme. Mr. Morshead rhymes, and he does it without strain and without affectation. There are no Browningesque experiments, and for the most part the rhymes come in their natural place in the verse; and they are the simple rhymes familiar to the verse-reader from childhood. We say not this in depreciation; the function of rhyme is always subordinate, and the less it obtrudes itself the better. In the phrasing of the dialogue there are perhaps echoes of Shakespeare where we do not welcome them: but it is, as a whole, dignified and simple. The rhythms, when simple, are satisfying to the ear: not so, we regret to say, the "long line" which Mr. Morshead adopts (in *Suppl.*, p. 42, and elsewhere), following the modern fashion. When such words as *I might, looked, clouds, only* are slurred into almost nothingness—many of them before consonantal groups, we cannot but surmise a dullness of ear. Mr. Morshead is at his best in a narrative, like that of the Messenger describing the Battle of Salamis: and for that fine piece we give hearty thanks. This is a worthy addition to the Golden Treasury Series.

English.

Spenser, The Fowre Hymnes. Edited by Lilian Winstanley. (Cambridge University Press.) 2*s.* net.—Those who are familiar with Mr. Harrison's "Platonism in English Poetry" will welcome Miss Winstanley's scholarly edition of "The Fowre Hymnes." In the introduction, Spenser's Platonism is fully discussed, and the inspiration he drew from Ficino and Bruno is more fully considered than we remember to have seen elsewhere. The edition is designed for university students, but, even so, Miss Winstanley has thought it necessary to translate or summarise the authors mentioned; we cannot think, however, that students, for whose delectation we have copious extracts from the "Symposium" in the original Greek, require a note to tell them the obvious meaning of so common an English word as "fraught."

A Treasury of English Literature. Selected and arranged by Kate M. Warren. (Constable.) 1*s.* net per vol.—We have here the first two sections of a reissue, in six parts, of the work originally published in one volume. The first section deals with the Old English writers (700–1200), and the second carries on the selection as far as the Age of Elizabeth; both contain Mr. Stopford Brooke's general introduction. Our readers will know that the general idea of the work is to illustrate that writer's famous "Primer," and we cannot imagine a more helpful or stimulating way of teaching English literature. The earliest section will naturally not appeal to teachers in secondary schools so much as to college lecturers, but the remaining volumes will help to solve a problem which has hitherto baffled many an earnest teacher in our schools—how to teach intelligently the history of our literature. We cannot commend the work too highly.

The Utopia of Sir Thomas More. Edited by H. B. Cotterill. (Macmillan.) 2*s.* 6*d.*—It is indeed a pleasure to have at last an adequate school edition of the "Utopia." Mr. Cotterill's notes leave nothing to be desired in essential scholarship. The "Utopia" has been too long one of those books which boys—and men too—have been content to know at second hand—by more or less jejune selections or by purple references in such writers as Green. But how much more stimulating and educative would it be as an introduction to civics or politics than the somewhat arid text-books at present prescribed for those subjects! In the meantime, we would suggest to Mr. Cotterill that his instances of reactionary "progress" (p. xxxviii) are, to say the least of it, somewhat trivial.

Johnson's Life of Milton. By S. E. Goggin. (Clive.) 1*s.* 6*d.*—The English volumes in the University Tutorial Series are too familiar to require a long notice. They are, we suppose, the outcome of much experience in coaching for a certain class of examinations; that is to say, they provide a mass of more or less relevant facts and a minimum of literary illustration. The charge of kindling literary enthusiasm is not to be lightly brought against an editor whose note on Abraham Cowley is that he "was a poet of considerable reputation in his own day, but is now little read; his first volume of poetry was published when he was only fifteen"; nor must we accuse him of shirking difficulties, when he actually takes the trouble to translate "nice discernment" by "accurate judgment."

The Heroes, by Charles Kingsley. Edited by F. Gorse. Illustrated. (Relfe.) 1*s.* 6*d.*—Messrs. Relfe have accomplished a great thing. They have published an edition of "The Heroes," beautifully printed and bound, on paper a pleasure to touch, and illustrated in the only adequate

way, at a reasonable price. The illustrations are by themselves worth the price of the book: a map of ancient Greece, pictures by Burne-Jones, and excellent reproductions of Louvre and Vatican statuary. If the editor had only let the light of English poetry play a little more upon the classical mythology, we should have been still more indebted to him; as it is, we thank him for his unpretentious list of further illustrative literature.

Ruskin's Sesame and Lilies. (Nelson.) 6*d.*—This is a volume in the "Short Studies in English Literature." It is well printed and appears to be excellently bound. The only sign of "editing" consists in a very short appreciation of the author. We are no friends of a portentous critical apparatus in school editions, but we would have been glad to see a few suggestions for literary exercises arising out of the text of an author so new to our schools and so admirably suited for study. We make the suggestion only to emphasise our gratitude for the publication of the series to which the book belongs.

The World's Classics. Three reprints are before us, Frere's "Aristophanes," Cobbold's "Margaret Catchpole," and Horne's "The New Spirit of the Age." (Oxford University Press, 1*s.* each.) Mr. Merry, the veteran Oxonian, fittingly writes the preface to Frere's well-known translation, and the four plays, Acharnians, Frogs, Knights, and Birds, are printed. We should have liked a longer introduction. Mr. Clement Shorter edits the little-known "classic novel of Suffolk," "Margaret Catchpole," which may or may not be a genuinely true narrative; and Mr. Walter Jerrold edits "The New Spirit of the Age," a reprint most interesting for its criticisms on books and people, about whom criticism has now, so it thinks, had the final word. The essays on Dickens, Ingoldsby, Tennyson, and "Festus" take us back to days (1844) when the world was much younger than now.

The Talisman. By A. S. Gaye. xxxii+375 pp. (Cambridge University Press.) 2*s.*—This edition of Sir Walter Scott's novel incorporates all the author's own notes, which are placed with the editor's at the foot of each page. The editor's introduction is brief but commendable. There is a good glossary.

History.

The Constitutional History of England. By F. W. Maitland. xxviii+547 pp. (Cambridge University Press.) 12*s.* 6*d.*—It must have been difficult for the editor of this book to choose a title that should be quite appropriate to the lectures which the late Prof. Maitland gave in the year 1887–8 to students at Cambridge preparing for the Law Tripos, which he then decided not to publish, but which Mr. Fisher has thought worthy of publication, and here, with the assistance of friends, gives to the world. "Constitutional History of England" scarcely seems appropriate, yet it is impossible to suggest another. From the syllabus supplied to the lectures which is here reprinted, we learn that the book consists of a sketch of public law (*i.e.*, of "Constitutional law") at five periods, viz., 1307, 1509, 1625, 1702, and 1887, and that the first and last are most thorough. And the same conclusion may be drawn from the number of pages devoted to each. The first period has 164, the last 218, leaving only 165 to the other three. To praise the work would be impertinent and superfluous. Written and delivered almost at the beginning of Dr. Maitland's public career, and years before the appearance of those monumental works by which he has earned the gratitude of all students of our law, it contains an account of our constitutional history which in every page is luminous and helpful. For not only is the condition of the law at the various dates given above represented, but the lectures largely consist of the history by which that condition was reached.

The Development of Modern Europe. Vol. ii. By J. H. Robinson and C. A. Beard. viii+448 pp. (Ginn.) 6*s.* 6*d.*—This continuation of the first volume tells the story of Europe from the Congress of Vienna, 1815, to the present day. We have found it most readable, and it should prove an excellent introduction to present-day politics. To the upper forms in our schools and other young people (and older people, too) wishing to understand their newspaper, we can heartily recommend this book. There are maps, coloured and otherwise, illustrations, bibliographies, and an index. Social matters occupy quite as large a space as those previously regarded as exclusively political. It gains from the distance at which it is written, being the work of two Columbian University professors, and we suppose it is this sense of detachment, as well as the natural prejudice of citizens of a republic, that dictates the curious note at the head of the lists of rulers. "Kings," say the authors, "have, during the nineteenth century, come to be held in ever-diminishing esteem: and it must be confessed that their names are now of relatively slight importance," &c. To us on this side of the Atlantic, this does not seem quite true, whether with reference to the kings who are dead or those who are living. Some of them, at any rate, have had influence on history as well as their ministers.

A Popular History of the Church of England. By W. B. Carpenter (Bishop of Ripon). xvi+517 pp. (Murray.) 2*s.* 6*d.* net.—This is a "popular edition" of the aged Bishop of Ripon's history which he wrote eight years ago. It is, of course, eminently readable and fair to all parties, though naturally the author is more interested in the episcopal churches with which the Church of England has had to do than with the non-episcopal. This appears especially in the more modern parts of the book and in its almost entire ignoring of Protestant Dissenting activity in missionary and other endeavours. There are a chronological table and an index, besides some thirty-five pictorial illustrations.

History of England. Vol. ii., 1509–1688. By W. J. Perry. xx+403 pp. (Relfe.) 3*s.*—The headmaster of St. Anne's School, Redhill, has issued the second volume of the only English history he thinks suitable for use in schools. It is much the same as the previous volume, which we noticed some time ago. He apparently bases his information on manuals, for now and then, *à propos* of nothing particular, he adds at the end of a sentence or paragraph "Ransome" or "Gardiner," "Hallam" or "Macaulay," in brackets. Sometimes he uses quotation marks and gives no reference. Very rarely do both quotation marks and reference come together. The consequence is that his knowledge never rises above the book he has in front of him, and is often out of date. The book is out of proportion. When he is drawing on Perry's "History of the Church of England" he dwells at great length on the doings of Convocations. There are many mistakes, whether of printer or author, and more slovenly constructions. Henry of Navarre's great battle, *e.g.*, is called Yory, and in the account of James I.'s legal controversy *re* Scots and English, those born before 1603 are called anti-nati. It is impossible to get any clear idea of James I.'s reign, so ill-arranged are the events.

The Expansion of Great Britain, 1715–1789. By A. Hassall. xxiv+263 pp. (Rivingtons.) 3*s*.—This is one of a series for the use of schools. They are all provided with maps, plans, genealogies, analyses, &c. We cannot recommend this volume. Though the usual story is told with fair correctness, there are so many slips, and the arrangement is so often faulty, that it is neither sufficiently trustworthy nor good as a model for our pupils to follow in examinations. To give but two examples of what we have said. Mr. Hassall (p. 138) says: "Lord Grenville [*sic*] succeeded Bedford as President of the Council." What really happened was that Lord Granville, President of the Council, died in 1763, and was succeeded by Bedford. The account of the Seven Years' War begins on p. 100, and though there is no war the story of which is easier to tell in a straightforward manner, Mr. Hassall, after getting as far as 1760, startles his reader on p. 109 by describing the opening of the war in 1756.

The Children of History. Later Times (1000–1908). By M. S. Hancock. 194 pp. (Pitman.) 1*s*. 3*d*.—These stories of children range from William the Conqueror to Florence Nightingale. About two-thirds are from English history. The history is perhaps not always correct either in text or pictures. But the book is very readable, clearly printed, and is supplied with abundance of pictures, coloured and otherwise, a summary, and a list of dates. A very good reader for the younger forms.

School History of Berkshire. By E. A. G. Lamborn. 256 pp. (Clarendon Press.) 1*s*. 6*d*. net.—An Oxford schoolmaster who has delighted to take his boys to visit the ancient buildings and other objects of interest in Berkshire here gives us the result of his experience, viz., the history of England as connected with one of its most historical counties. Mr. C. R. L. Fletcher has written a short introduction. We cannot imagine a more delightful book for the boys and girls of Berkshire, or for older folk either, whether residents or visitors to the county. There is a large number of illustrations, many architectural; but unfortunately there is no index.

For King and Love, and other Stories. By W. B. Cooke. 259 pp. (Ouseley.) 3*s*. 6*d*.—Eight stories, reprinted from newspapers, two of them "ghost" stories of the present day, six of them representing possible episodes in the Civil War of the seventeenth century. The sympathies of the writer are obviously with the Royalists, and his pictures of their always more successful but merciless opponents are overdrawn, to say the least. Their English is curious, and the author has evidently no idea of seventeenth-century rules for the use of the second personal pronoun. If any speech consists of more than one sentence, the person addressed is almost always called both "thou" and "you."

The Druidess. By F. Gay. 195 pp. (Ouseley.) 2*s*. 6*d*.—A story of the sixth century, the scenes of which are laid in south-west Britain and in Ireland, which is evidently based on knowledge of things Keltic unknown to the average Englishman, and the preface to which acknowledges that liberties have been taken with authentic history, is difficult to judge. The heroes are Cormac, a British youth, Ethne the Druidess, and Elgiva, a Saxon. Incidents succeed each other with bewildering rapidity, and the passions of the hero and heroines are primitive. For these reasons, perhaps, it will be welcomed by the "boys and others" for whom it was written, and will give them some idea of Keltic ways.

Geography.

A School Note-book on Scales and Contour Maps. By Rev. P. W. Unwin. 72 pp. (Cheltenham: Norman, Sawyer.)—Writing primarily for the use of students preparing for Army Entrance examinations, Mr. Unwin, of Cheltenham College, has evidently in view all that large section of the public which has occasion at some time or other to *read* a local map. Volunteer officers, land surveyors, civil engineers, bicycle tourists, will find excellent matter for cogitation as well as for material use in this book. It consists only of three chapters, but each chapter is as full of matter as an egg is of meat. Exercises are innumerable and diagrams are instructive. The author apologises for his draughtsmanship. He need not. His diagrams are none the worse for appearing rough; they look natural in consequence. Briefly, the subject-matter is arranged thus: Chapter i. explains and illustrates the drawing instruments requisite, and emphasises the need of care in their keep and use. It also explains the reasons why certain scales afford the information they profess to give, as well as the method of use. Chapter ii. deals with the construction and use of scales—of course, especially from the point of view of army work. "First find the representative fraction (R.F.) and the rest is plain sailing" is the golden rule. Chapter iii., which is perhaps the most important part of the book, enters fully into the question of contours and contour maps. His first practical illustration—the contours round Cheltenham—shows that the author is quite clear on his subject, and, being so, easily makes it clear to his readers. As there is a dearth of books dealing fully with this side of geography, the author's hope that he is supplying a felt want should be realised.

Philips' Handy Atlas of General Geography. Edited by George Philip. 2*s*. 6*d*.—This atlas, measuring as it does only 7 in. × 4¾ in., and containing forty-eight maps with an index of fifty three-column pages, thoroughly deserves its descriptive epithets. It is handy and it is general. We have tested it on the score of up-to-dateness and are satisfied. A few physical maps in the orthodox garb of brown, green, and blue are inserted, and give it tone. One grumble we must have. The numbering of the pages is erratic. Some numbers are shown in the bottom right-hand corner, some in the top left-hand, and none in the usual place. The maps are all double-paged and printed on one side of the paper. This is, of course, an excellent feature, but naturally the book opens at the blank pages. We suggest that this blankness be utilised for page numbers in future editions.

A School Text-book of Geography. By Prof. L. W. Lyde. xi+410 pp. (Black.) 3*s*. 6*d*.—This book is thoroughly imbued with the "economic" spirit which Prof. Lyde breathes into all his geographic works. We are convinced that he is right so to do. Geography, to be taught on the right lines, must indicate the interrelation of man and his environment. We commend to the notice of all—whether they are with the professor in this theory or against him—the illuminating pages (pp. 330 *sqq*. of the "Text-book") dealing with the geography of the east side of North America—with its Atlantic harbours and "Fall line," its Appalachian gaps and river routes, its mineral and agricultural wealth and prosperity. Almost any pages will do equally well. Cause and effect, effect and cause—which is the objective in teaching—are emphasised over and over again, and the book in consequence *educates*. For the rest it is divided into eight chapters—each consisting of numerous sections.

These sections, if only for the sake of reference, we think, might have been numbered with advantage. After a full introduction on general principles and world features, Europe, Asia, and North America are treated of under their usual political divisions, while Africa and South America are discussed under various regional titles, such as the "Calms of Capricorn" and the "Great Tableland." It is needless to remark that everything is up-to-date, and that the style is racy and interesting. We miss, however, the exercises with which latter-day geographies have made us familiar, and here Prof. Lyde imposes a heavy burden on the majority of teachers, who are, we are fain to confess, often at a loss to frame exercises suitable enough and numerous enough for the occasion.

A First Geography. By C. A. E. Rodgers. 48 pp. (Blackie.) 1*s.*—This is an introduction to geography based upon a system of oral teaching which the author evidently believes in and understands. The book is, in fact, an outline to be filled up by such supplementary questions and explanations as must naturally arise in a class of beginners. We are sure that in the hands of a competent master much may be made of it. The illustrations are coloured and apposite; the text is clear and there is not too much of it; the book is well got-up and of a convenient shape. We commend it for the use of children of from nine to ten years of age in preparatory departments.

Mathematics.

Introduction to Higher Algebra. By Maxime Bôcher. xi+321 pp. (New York: The Macmillan Company.) 8*s.* net.—The expression "higher algebra" has in common use a very fluctuating meaning; in the present case higher algebra is to a large extent the algebra of quadratic forms, though various topics are discussed that do not come under that designation. The elementary algebra absolutely necessary for the reader does not go beyond quadratic equations, the fundamental properties of determinants, and the method of mathematical induction; but at the same time the study of the book would be practically hopeless for one who has not reached that maturity of judgment which is usually obtained only by a much longer training than is needed for the modest outfit just indicated, and this is especially true as regards analytical geometry, since many applications of the general theory are geometrical in their character. In the earlier chapters some of the simpler properties of matrices are introduced, and interesting discussions of linear equations and linear dependence are given, while the notion of invariants is developed with helpful illustrations from geometry. The special subject of quadratic forms is begun with a geometric introduction on p. 118, and is continued through several chapters. Factors of polynomials in one, two, or more variables are subsequently considered, and the theory of elementary divisors and of equivalence of matrices with applications to forms is taken up in the closing fifty pages of the book. A characteristic feature of the exposition is the careful statement and rigorous proof of all the leading theorems. Exercises are attached to many of the sections, and will be found to be of essential service to the reader; it is, we think, probable that those to whom the subject is absolutely new would have liked to see some of these exercises or others of a kindred type worked out in the text. The book as a whole is a really valuable addition to our mathematical text-books, and is so lucid in its exposition that it is certain to be gladly welcomed by all students of higher mathematics.

A Course in Mathematics for Students of Engineering and Applied Science. By F. S. Woods and F. H. Bailey. Vol. i. xii+385 pp. (Ginn.) 10*s.* 6*d.*—One of the chief objects of the course of mathematics laid out in this, the first volume of a work that is intended to cover all the mathematical subjects of an engineering college, is "to present in a consecutive and homogeneous manner an amount of material generally given in distinct courses under the various names of algebra, analytic geometry, differential and integral calculus, and differential equations." The subjects treated in this volume include a sketch of determinants, with notions on elimination; algebraic equations, with special discussion of the solution of numerical equations, transcendental as well as algebraic; graphs and co-ordinate geometry; differentiation and easy integration. Conic sections occupy a considerable space, but many curves are discussed which would frequently be excluded from the work of engineering students in this country, though, except for the limits of time imposed on most college professors, they would often appear in their syllabuses. A valuable feature of this part of the work is the introduction at a very early stage of such simple examples as "the witch," "the cissoid," and "the strophoid"; these form interesting and instructive examples of the translation of a geometrical or mechanical property into the language of algebra. Examples illustrative of derivatives are drawn both from geometry and from mechanics, though the latter examples are perhaps hardly so numerous or so prominent as one would expect in a book designed expressly for engineering students. In books of this class it is always difficult to hit the golden mean in the matter of rigour of demonstration; on the whole, the work under notice is satisfactory in that respect. Each chapter is provided with numerous examples, and for most of these the answers are given. Any student who works through the book will have gained a command of mathematics that will stand him in good stead in his practical studies.

Algebraic Examples. Book I. By A. F. Van der Heyden. viii+88 pp. (Edward Arnold.) Without answers, 1*s.*—The examples are intended to cover the usual work of school algebra up to and including easy quadratic equations. A set of examples cannot be tested adequately apart from schoolroom practice, but, so far as a general inspection shows, the exercises are well arranged and sufficiently varied to illustrate all important processes and results.

Logarithmic and other Tables for Schools. By Frank Castle. 36 pp. (Macmillan.) Stiff paper covers, 6*d.*—The tables included in the collection, all to four figures, are: logarithms and antilogarithms; natural sines, cosines, and tangents; logarithms of sines, cosines, and tangents; radians (two tables); functions of angles at 1° interval; naperian logarithms; powers, roots, and reciprocals; square roots; reciprocals; exponential and hyperbolic functions (sine and cosine); useful data. The type is very clear and the tables are not overcrowded, as a wide page is used. So far as can be tested by a general examination, this collection is excellent in all respects.

Science and Technology.

Common-sense Needlework. By Jane A. Fleming. 143 pp. (Arnold.) 3*s.* 6*d.*—The chief aim of all teaching of domestic arts should be to get the skill learned in the school practised in the home. This applies in a marked degree to needlework, for there is failure somewhere when a girl, who can do a neat specimen patch, goes to school or work with neglected clothes. Miss Jane A. Fleming meets this painful contradiction in a very

practical way. Children should, she urges, be allowed to practise stitches on garments of their own that need mending. Thus, after the actual making of a stitch, such as hemming, is mastered, the child should bring from home some garment with a torn hem and give it a fresh lease of life by substituting a new hem for the old one. The suggestion is good, and the reviewer happens to know that it has been tried with success both in regard to the work and the personal pride of the little sempstresses. This is just the kind of real work that appeals to children, wearied with the production of numerous specimen pieces which are never free from a tendency to create dislike of the subject because they are not used in a practical way. It is a pity that Miss Fleming departs from this essentially common-sense method in her syllabus given in the last chapter, in which she proposes that holes should be cut in the specimen garments so that they might be filled in with instructive patching. Rents in clothes may be found quite too easily in almost every elementary school, and a tactful teacher could repair them both usefully and educationally without inviting maternal criticism. Besides, in Miss Fleming's suggestion there is the latent idea of destructiveness which should be kept away from the child mind. This is just one of the things we have to guard against in all education which takes a wide and humane view of the subject. The book contains many useful hints on sewing and the method of teaching it, and the diagrams are clear and helpful.

How to Make Up Garments. By Agnes Walker. 144 pp. (Blackie.) 3*s.* 6*d.*—Miss Agnes Walker has written this book as a sequel to her well-known and clever "Manual of Needlework and Cutting Out." The diagrams, which form a special feature of the book, are clearly drawn—so well, indeed, that they show to more advantage than the explanations which accompany them. It would have been well to bring out more definitely the quantity of material necessary and the why and the wherefore of the measures. Reasons remain with students and children. A chapter on ornamental stitches is included which should prove very useful, especially now that the desirability of correlating drawing and needlework is becoming recognised.

The Cutter's Guide. By M. E. Roberts. 86 pp. (Sydney: Angus and Robertson; London: Australian Book Co., Warwick Lane.) 7*s.* 10*d.* net post free.—Some parents, especially those of the middle classes, are beginning to realise that it is often more economical to employ one or two of their girls at home than to send them to badly paid posts, that is, taking the mere money point of view. To the resourceful daughter, whose happy lot it is to assist her mother or occasionally take her place, Miss Roberts's book should be welcome. Herein are full directions for drafting bodices and skirts to fit any figures. The instructions are illustrated by diagrams, so that if the young housekeeper has learned the elementary principles of drafting she should be able to make patterns to fit herself as well as her mother and sisters. Miss Roberts also tells how to cut various styles from the plain pattern; but here again the work might have been made more interesting, and its lessons more enduring, if the reasons for the various steps had been stated. In the one case instruction is given for a single occasion, and it may be as easily forgotten as remembered; in the other, there is a basis and permanence, and therefore genuine education. It is this that matters, and to it we are coming—slowly, no doubt, but surely—in the broadening education of the near future.

Through the Depths of Space. By Hector Macpherson, jun. vi+123 pp. (Blackwood.) 2*s.* net.—Mr. Macpherson has compressed into his primer a large amount of interesting material relating to the various bodies in the solar system and in the stellar universe. He has read widely and well, and he writes with the enthusiasm which a study of the heavens inspires. His little book will create and foster interest in celestial science in all who read it.

A Plant Book for Schools. By Otto V. Darbishire. viii+200 pp. (Black.) 2*s.* 6*d.*—Writing, apparently, without reference to any examination syllabus, Dr. Darbishire has been able to treat his subject with more freedom and unconventionalism than are common in a serious manual of elementary botany. The result is a book of more than usual value to the teacher, to whom, rather than to children, it will chiefly appeal, notwithstanding its conversational style. It is very obviously the work of a sound botanist and experienced teacher who is thoroughly imbued with the new spirit of botanical teaching. It is illustrated with several drawings and thirty-two plates of reproductions from photographs.

A Cycle of Nature Study. By M. M. Penstone. x+300 pp. (National Society.) 3*s.* 6*d.*—The fifty-two chapters of this book contain a wealth of information and suggestion, addressed to teachers, respecting topics for seasonal nature-study suitable for children under twelve years of age. Of books explicitly dealing with the nature-work of young children this is the best we have yet seen, for it differs from most of its predecessors in being as sane as it is enthusiastic. We agree thoroughly with the author's protest against the spurious human psychology which is so often introduced into children's nature-study, "as though plants and animals, with their struggles and ingenuities and triumphs, had not interest enough of their own." The book is a storehouse of natural history of exactly the kind required, and is rich in the practical hints which only a thoughtful and experienced teacher could supply. There are sixty-seven useful illustrations.

A Health and Temperance Reader. By H. Major. viii+116 pp. (Methuen.) 1*s.*—The information and advice conveyed in this reader are in general sound in substance, but the platitudes with which they are interspersed will, we fear, lessen their desired effect upon youthful readers. The book is not conspicuous for literary merit, and it contains no illustrations.

First Aid to the Injured. By Friedrich von Esmarch. Translated by H.R.H. Princess Christian. xv+138 pp. (Smith, Elder.) 2*s.* net.—This seventh and enlarged edition of the English translation of Dr. Esmarch's deservedly successful lectures will, it is to be hoped, have a large circulation. The little book contains admirably concise instructions for emergencies in which prompt action is of the first importance. It is very unfortunate that such a book should be without an index.

Miscellaneous.

The Charm of the English Village. By P. H. Ditchfield. Illustrated by Sydney R. Jones. 167 pp. (Batsford.) 7*s.* 6*d.* net.—The interest of this book lies more in the frontispiece in coloured photogravure and the 120 line sketches of buildings, gardens, and other rural scenes than in the descriptive matter, which seems to have been written around the illustrations. Both text and picture, however, present English country life in its most attractive aspects, and the volume will appeal to all who are

interested in antiquities, architecture, or art. Those who actually live in rural districts know that the picturesque cottage is often a plague spot caused by impure water-supply, unsavoury sanitary arrangements, and indecent overcrowding. But the authors of this volume are only concerned with bucolic charms, and they have succeeded in depicting by pen and pencil some very pleasing features of the hamlets and houses in a few parts of England. Of course, it would be possible to name many subjects, such, for instance, as the Market Cross at Chichester, quite as worthy of description and illustration as those dealt with; but let us commend the author and artist for what they have included rather than express regret for what they have omitted. Sometimes we fancy that Mr. Ditchfield generalises too freely, as when, referring to cottage garden paths, he says: "In Sussex they are paved with large flat Horsham slabs of stone"; or of rectories and vicarages: "The interior of the rectory speaks of learning and books." We know many garden paths in Sussex, and rectories there and elsewhere, which are not correctly described in these terms; but the characters are appropriate, so let them pass.

The Steep Ascent. Memorials of Arthur Heber Thomas and Records of the Ramnad Mission, 1532–1906, with a Prefatory Note by the Hon. Mrs. Gell. xii+262 pp.; 22 illustrations. (Bemrose.) 5*s.* net.—This book is dedicated to all public-school boys in memory of one who gave himself to the work of Christian missions, and died young, full of promise. There are many such of whom the world hears little or nothing, but they embody the best traditions of our nation: the record of a life spent for noble ends, and without a hint of private interests, is especially worth reading at this day. The story is told by means of letters and the like, and without gush, although it is a mistake to print letters written to the bereaved family, which are naturally written in somewhat exaggerated terms. The book has an added value in containing a history of this very ancient mission. As a literary performance it has few claims to attention, and makes none; the materials are not digested, and it is a collection of notes rather than a book. Its worth lies in an unaffected sincerity and the suggestion of motives other than mercenary.

The Annotated Scotch Code, 1908. xxvi+580 pp. (Nelson.) 2*s.* 6*d.* net.—This well-known and almost indispensable work appears this year in an enlarged form. In addition to the full information of previous volumes, it contains the various memoranda issued by the Department on the subjects of school instruction. In this way it meets the demands of Art. 34 (*a*) and (*b*) of the New Code, which requires a copy of each memorandum to be kept in every school.

Montaigne and Education of the Judgment. By Gabriel Compayré. Translated by J. E. Mansion. xiii+139 pp. (Harrap.) 2*s.* 6*d.*—The schoolmaster, like other sensible men, may reap pleasure and profit by reading Montaigne's essays. But the student of educational science will decide, we are disposed to think, that the direct assistance in his work derived from M. Compayré's appreciation of Montaigne is not very great. At the same time, the book is very readable, and the translator has done his work well. It has been said that anybody has a right to views about education, but the *obiter dicta* of a well-read man of the world like Montaigne, with his remarkable power of delightful expression, are likely to be taken a little too seriously. While one may be glad to hear the opinions of all experienced persons on education, it does not follow that their statements must be taken as authoritative. Monographs like those of this series are particularly interesting, as they serve to illustrate how slowly a science of education grows, and how little each pioneer adds to the work of those who preceded him. The book, however, may be recommended to teachers, and it will probably lead those who do not know Montaigne from his writings straight to the essays themselves; and if it does this it will have been successful indeed.

Elements of Angling. By H. T. Sheringham. 259 pp. (Horace Cox.) 3*s.* 6*d.*—So many teachers and schoolmasters are anglers, "expert" or otherwise, that this book should appeal to the profession. It consists of a series of articles which originally appeared in the *Field*—where they were duly perused and approved by many. The articles have been revised, and considerable additions have been made to them. Nominally written for beginners—and admirably adapted for that purpose—they are full of odds and ends of valuable information, and the oldest of "experts" will find something new in them. In style the book is between the technical instructions of, say, "John Bickerdyde" and—at the opposite extreme—the airy philosophies of Mr. Earl Hodgson. It is extremely simply written, and the varied arts of angling are developed in easy and gradual sequence. Much ground is covered—from the purchase of elementary tackle, through the initiatory stages of bottom fishing, the use of the "wet" and "dry" fly, to the capture of pike and the slaying of sea trout and lordly salmon. The last chapter gives valuable hints as to how fishing may be obtained and what expense may be expected. If there be a weak point in the book, it is the somewhat hazy printing of the smaller details in the only two plates with which it is provided.

Voice Training in Speech and Song. By H. H. Hulbert. 83 pp. (Clive.) 1*s.* 6*d.*—The diversity of existing opinion as to the best methods of teaching voice-production should teach humility to those engaged in the work. As a general rule, every professor of the subject, with his followers, holds that his method is different from all others, and is the only right one. To a plain man the natural inference might well be either that all are equally futile, and that pupils sometimes attain proficiency in spite of teachers and their methods, or that all are equally right, and the method does not much matter provided the teacher is gifted with some measure of taste and common sense. Perhaps consolation may be derived from the fact that something like the same state of things may be found in other branches of musical teaching, as well as in the teaching of other subjects. There is some danger of teachers of the various branches of the art of music becoming too much immersed in technical details, too apt, unconsciously, to regard teaching as an end in itself instead of a means to an end—unable to see the wood for the trees; and the more conscientious and painstaking they are the more apparent does this danger become, unless, in addition to conscientiousness, they can keep alive the proper insight and inspiration of the artist. No artistic proficiency can be attained without attention to technical details, but the teacher needs steadily to keep in mind the end and object of these details. In view of these considerations, it is difficult to see how any student of singing or public speaking is likely to sing or speak the better for being informed that "the mouth is a large resonating cavity forming the lower of the two apertures by which the air and voice escapes [*sic*] from the body," or

that "the nose is a large and complicated resonance chamber situated between the hard palate and the base of the brain, its walls being composed of thin bony plates and cartilages." Much information of this kind, illustrated by several more or less gruesome pictures, overweights a good deal that is useful and interesting in Dr. Hulbert's treatise. In using the book, it would be well that the student should bring his sense of humour to bear on the subject; this may act as an illuminant to help him to distinguish what is valuable in the work from what is irrelevant. A sense of humour is not always a marked characteristic of the modern educational theorist; it is a pity that in this particular case the author should not have exercised this faculty; he would then have been able to make a more effective use of his earnestness and his fund of information.

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.*

Practical Science as a Training in Economy.

The object of this short note is to direct attention to an important aim in education which does not always receive its full share of notice, namely, economy. It will not be denied that the formation of good habits with regard to small factors leads to the establishment of valuable economic principles. In the ordinary modern education as given in our secondary schools, only a few of the subjects studied admit of the demonstration of the value of economy. It is therefore specially important that in the study of those subjects which do admit of this demonstration we should be very careful to take advantage of the fact and impress it on students.

One of the principal school subjects is science, and it is in chemistry that admirable opportunities present themselves for teaching the value of economy. One is obliged to be somewhat dogmatic, but dogmatism is to be preferred in dealing briefly with a large subject. Following are a few simple instances which occur in a chemical laboratory:

(i) Tidiness of the working bench. How often is it pointed out that to work with a tidy bench means the saving of time? This simple precaution may seem petty, yet most of those who have had experience in laboratory work will agree that it is perhaps as difficult to convince students on this matter as to convince them that light is invisible. The habit when once acquired is a valuable one, and may advantageously be applied to all phases of life

(ii) Another small matter which is much larger than it at first appears is the gas item. How many students are taught that the gas they use (and waste) for heating does not come from a free and unlimited supply? I think I am correct in saying that in most schools and colleges no notice is ever taken of the quantity of gas consumed. To those accustomed to a large amount of laboratory practice such a thing as a stray Bunsen burning away uselessly is often unheeded. Yet directly one completely strange to the life in a laboratory sets foot inside he notices the amount of gas burning, and generally he is right in suspecting waste.

(iii) Distilled water is another article the cost of production of which receives little attention from consumers.

(iv) Filter papers are usually more expensive than young students are led to believe from the way one sometimes sees them used up wastefully.

These few examples must suffice. They show plainly how a science which should be one of the best examples of economy may be made one of the worst examples of waste. I have touched upon one science in particular with which I am acquainted, but teachers in various fields of instruction can perhaps find valuable economical principles if they will only look for them.

W. G. Llewellyn.

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National Home-Reading Union.

I shall be glad if you will kindly allow me in your columns an opportunity of informing your readers that copies of the Book Lists of our Young People's Course for next session may now be had by any teachers who desire to form reading circles in connection with us. Applications should be addressed to me. Our reading session proper does not open until September, but our lists are prepared in advance in order that teachers may, if they desire, requisition books at an early date from their education authorities.

May I, for the benefit of any of your readers not yet acquainted with our school methods, take this opportunity of stating that the general aim of the Union in connection with schools is to increase the effectiveness of the reading lesson and encourage children in the home reading of good and healthy books? It is suggested that teachers should become members of the Young People's Section. The fee (which local education authorities are authorised to pay) is 1s. 6d. per annum per teacher, whose reading class can thus become an N.H.R.U. Reading Circle. All the members of it are then recognised as "school members" of the Union, and are entitled to apply for certificates when certain conditions have been fulfilled. Reading circles have been established under the Abertillery, Bolton, Bath, Eccles, Glasgow, Keighley, Leeds, Southport, Wiltshire, and Wimbledon Education Committees, and in addition there are now 485 circles at work under the London County Council. If any of your readers would care to have further information, I shall be glad to give it, either by letter or interview.

A. M. Read. (Secretary.)

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LONDON EDUCATIONAL ADMINISTRATION.

WHEN the new London County Council took office last year, one of the first questions to be faced was the reform of educational administration. Great discontent existed as to the existing arrangements, and there was a demand for change both from within and from without the service. Within two months of the election, a special committee was appointed "to consider and report in what particulars the education service of the Council can be conducted more efficiently and economically." Mr. Hayes Fisher was elected chairman, and the sittings of the committee extended over twelve months. On July 7th the report of the committee was adopted by the Council without a division, with the addition of an amendment, which was accepted by the chairman.

When the County Council took over the work of the School Board in 1904, it organised the education department on the same lines as the other committees of the Council. It hardly grasped the magnitude of the work it was undertaking, or the amount of technical detail involved in the education of three-quarters of a million of children in elementary schools, in addition to the pupils in secondary and technical schools, students in evening schools, polytechnics, training colleges, &c. The Council had in its service a handful of able officers who had done the work of the Technical Education Board, and it had to absorb the large and highly-trained staff of the old School Board.

The ordinary lines of Council work were fairly well defined. The Clerk was supreme over the administrative side, and attached to committees were various executive officers, the chief officers of the Fire Brigade, the Tramways, Parks, &c. The Council and the School Board had always been jealous of each other, and when the former absorbed the latter, it was only human in thinking that the Council system must be the best, but was perhaps too much inclined to think all the arrangements of the School Board must be bad.

The Council decided to retain the whole detailed administration and to delegate as little as possible to the Education Committee. Further, the Council decided to withhold from local members any of the powers they had formerly possessed, and to give the minimum of authority to managers. There was a prolonged wrangle with the Board of Education as to co-opting members, ending in the Board's discomfiture. The Council then settled down with a committee of thirty-eight councillors and a few old School Board members (imposed on them for a year by statute) to carry out the work of managing London education with its provided and non-provided elementary schools, its industrial schools, its secondary schools and colleges, its polytechnics and institutes. Previously, fifty-six School Board members, with no other work than education, and only the provided schools and a few industrial schools to manage, had found their energies overtaxed.

But the system was hampered most of all by the prevalent ideas as to central administration and by the existence of the system mentioned above. A gallant attempt was made to force the new wine into the old bottles, and instead of making an education department with a capable chief with full power to deal with details, the Council attempted to retain control of everything, however trivial, and established a triumvirate to rule the new office, of which the Clerk of the Council with his assistant was to undertake what was called the administrative side, while an executive officer was to undertake the management of the schools, and an educational adviser to give expert advice.

Such a system was bound to fail. In the debate in the Council on July 7th it was admitted on all sides that reform was necessary. The committee had reported in favour of one controlling head, and the chairman, in bringing forward his recommendations, had only to quote from the minority report, which had been drafted by the more conservative members of the committee, who clung to the old Council system, to show how general was the admission of failure.

The minority stated that there has been "overlapping of duties, leading to (i) unnecessary duplication of correspondence (sometimes of a contradictory nature) with outside authorities and with officials and teachers in the service, (ii) unnecessary complication and sometimes duplication

of files of correspondence, (iii) friction on the part of zealous and capable officers, (iv) waste of time and energy, (v) unnecessary attendance by officials of each of the different departments at some of the sub-committees and sectional meetings, (vi) some disorganisation of educational administration."

It was, in fact, obvious that the attempted distinction between administrative and executive was impossible, and that the actual lines drawn were illogical and, indeed, ridiculous. For example, a circular relating to Empire Day was sent by the Clerk's department to all non-provided schools, and by the Executive Officer's department to all provided schools, on the principle that the managers of the former were independent authorities. No other council in England makes such a distinction. The special committee therefore reported to the Council that, conceiving the education service to be "different in its character from other municipal services, and comprising a vast and homogeneous mass of detail not appertaining to any other service," it desired to place the entire work of education under the control of one responsible directing head.

In pursuance of this object the educational staff of the Clerk of the Council has been handed over to the Executive Officer, with the exception of a representative of the Clerk to transmit the reports of the Education Committee to the Council and the latter's decisions back to the committee.

By the new arrangement the executive and administrative control of the education office is in one hand. There is, however, left the Educational Adviser of the original triumvirate. He will enjoy an independent position, and will be able to give expert advice to the Education Committee on educational problems. The inspectors who are placed under the control of the Executive Head will still be available to give reports to the Educational Adviser, who will now be regarded as "advisory counsel and intelligence officer."

The chief result of the new arrangement is to give a chance for concentration of administration. The change should mean simplification and economy, as well as greater efficiency. By the retention of the independent expert adviser the committee has the advantage of hearing a fresh opinion and getting the views of an officer who has leisure to think out educational problems, but the administrative functions will all be in the hands of an official responsible to the Education Committee. Other reforms are still being considered. It will be remembered that a few more members were added to the committee last March, when seven outside persons were co-opted. Some amendments of the standing orders are being made so that minor details may be settled in the committee, and not overwhelm the Council agenda. Further delegation of powers must follow, and probably devolution from the committee to some other local bodies. The financial control of the Council will, however, be fully maintained, and was probably never stronger than at present. It is interesting to note that the chairman of the special committee, Mr. Hayes Fisher, is now chairman of the Finance Committee, and that he has shown every intention of keeping a tight hand on the educational expenditure. There is no fear of the Education Committee becoming independent of the Council's financial control, but it is to be hoped that greater delegation and responsibility will lead to much more thorough and better administration.

The minority on the committee affected to fear the result of placing too much power in the hands of the Executive Officer, who has now been made the responsible official for the whole administration. The argument that it is impossible for one man to control so vast a work is somewhat ludicrous, when it is realised that to leave things as they were was to leave the ultimate control under the Clerk, who had not only the Education Committee work, but that of all the other committees of the Council.

The divided allegiance of the staff had made any united work impossible, and there was much truth in the statement that much of the time of the Clerk's and the Executive Officer's officials was taken up in watching each other. There will be an immediate saving of staff. It is understood that at least twenty-five temporary officers will be dispensed with at once, and probably a larger number can ultimately be spared.

One anomaly under the old system was the position of the Council's inspectorate. The Chief Inspector was in a semi-independent position, and while the organisers of special subjects (manual training, cookery, &c.) were under the executive officer, the ordinary inspection staff were not under his control. This anomaly has now been removed and the inspectors placed under the responsible head, who will be able to reorganise their work as may be found necessary. The amendment referred to above, which was accepted by Mr. Hayes Fisher, was moved by the chairman of the Education Committee, and related to the position of the Chief Inspector. It was thought desirable, if the control of the inspectors was handed over to the executive branch, to retain sufficient direct access to them by the Educational Adviser to ensure that on purely expert matters he should be enabled to obtain from them independent opinions, so that, as it was said in the course of debate, educational ideas should not only come through the distinctly executive side.

To sum up the new position: the whole administration will now be under the control of one director of education responsible to the committee. The Council will retain the fullest ultimate control, for no questions of general policy can be settled without reference to the parent body, and all expenditure will be subject to the close scrutiny of the Comptroller and the Finance Committee, but the details of educational work will be dealt with by those responsible for the actual management and organisation of the schools.

THE DISINFECTION OF SCHOOL PREMISES.

By HENRY KENWOOD, M.B., D.P.H.,
Chadwick Professor of Hygiene in the University of London, Medical Officer of Health for the Metropolitan Borough of Stoke Newington, &c.

NO one who is conversant with all the facts will dispute the contention that the periodical disinfection of school premises is an important branch of school hygiene which is often culpably neglected. A systematic disinfection of school premises is, with rare exceptions, performed only as a consequence of the epidemic prevalence of infectious disease among the scholars, and even then the methods adopted are not always those which the more recent scientific work has demonstrated to be the most effective. Yet the facts which indicate the necessity for this precaution, as a routine practice, are of a very striking and convincing nature.

It is only possible in a short article to indicate the ground upon which the case for frequent periodical disinfection of school premises is based. In the first place, there is the circumstance that the incidence of most of the infectious diseases is upon those at school ages; school children therefore represent the most inflammable material in the community upon which the spark of infection may alight. If, then, we collect and concentrate that material day by day within the narrow compass of school premises, the risks of the spread of infection must be at a maximum on such premises. It must also be admitted that the condition of overcrowding which demonstrably favours the spread of disease in the general community comes into operation in an exaggerated form in our class-rooms. The above circumstances *must* combine to make school class-rooms exceptionally favourable centres for the transmission of disease.

As would therefore be expected, the statistical evidence in support of school attendance being responsible for the spread of infection is overwhelming; and from a mass of such evidence the statistical statements of Sir Shirley Murphy, with reference to the prevalence of scarlet fever and diphtheria among the scholars in the elementary schools of the London County Council, may be singled out for reference by those who may be disposed to question the validity of the above conclusion. In common with most other medical officers of health, one could quote numerous specific instances in which the evidence of class-room infection has been incontrovertible. But there is a tendency among many parents to exaggerate the case of school infection and to conclude unwarrantably that all infection contracted by their children while attending school is necessarily the direct consequence of such attendance. "All my trouble began when my children commenced their schooling," is a statement to which I have repeatedly listened from aggrieved parents; and one has had to point out to them that, however complete the precautions, the majority of town children will inevitably contract some form of infectious disease during their school period of life, because that happens to embrace the most susceptible age period of several infectious diseases.

But whatever may be the proportion of the incidence of infectious disease which may be ascribed to the circumstance of school attendance, it is higher in my opinion than it need be, and parents have a legitimate grievance against a system of compulsory school attendance which does not embrace every practicable and reasonable precaution to safeguard the health interest of those who are compelled to submit to it; and it seems to me that in this matter of disinfection a simple and obvious precaution is very generally neglected. It is indeed surprising that so little should be done in face of the recognised frequency of class-room infection and the consequent epidemic prevalence of disease; and in face of the evidence that is gradually accumulating of the valuable results accruing from the frequent disinfection of school premises.

Before I indicate the scheme of school disinfection that I would recommend, let me indicate briefly the necessity for frequent periodical disinfection even when infectious disease is little, if at all, in evidence. In the first place, the risk of the school infection is a constant one. It is rare, even in smaller communities, that the infection of scarlet fever, diphtheria, measles, and whooping-cough is entirely absent from the community, and even then the risk of its introduction is always imminent; and attendant upon recognised (notified) infection there is always a variable amount of unrecognised ("missed") early or mild infection. These "missed" early or mild cases spread much infection in school class-rooms; and despite all the medical officers of health, the medical inspector of scholars, and the most skilled co-operation of school teachers may be able to achieve, this unrecognised infection will continue, in a reduced measure, to be a menace to the health of school children; and frequent disinfection is an easily practicable means of reducing its potency for evil. In addition to these mild cases of infection there may be "carrier cases," namely, children who are passive carriers of infection while not themselves affected in any way by the germs they harbour in their throats or in their noses, &c. In some school outbreaks of diphtheria the "carrier cases" in a class from which several sufferers have previously been removed have been found to be far more numerous than the actual sufferers; but while in good health and fully capable of benefiting from schooling, they may disseminate virulent germs upon the other scholars and the desks, floors, books, &c., of the class-room, when they cough, sneeze, recite, or sing. Flügge and others have demonstrated that the germs may thus be sprayed into the atmosphere for several feet from the individual.

The infection of scarlet fever, diphtheria, measles, and whooping-cough from such insidious sources, remaining unrecognised in periods when

the class-attendance is good, may light up a considerable measure of school infection. But the plea for a routine disinfection of school premises does not end with the case in reference to the common infectious diseases; there are cogent grounds for adopting the practice as a serviceable precaution against the spread of consumption and certain disease-producing organisms on skin, hair, and clothes, which are known sometimes to constitute a part of class-room dirt and dust; its practice, moreover, involves an associated high standard of cleanliness which possesses an educational aspect of high moral value. It must also be recognised that the operations of cleanliness (including the provision of abundance of fresh air) are themselves disinfectant in nature, and that therefore a more frequent cleansing of school premises will serve to reduce the possibility of infection. The unsatisfactory cleansing arrangements which so generally obtain are a grave reflection upon education authorities, for dust of previous days, stirred up and kept in circulation on subsequent days by the movements of the scholars, is capable of conveying disease in many forms. There is no doubt that the communication of infection is directly personal in the majority of cases, and therefore, as the standard of cleanliness of person and of habit is increased, so is the danger of infection reduced. The regular soaping and washing of scholars considerably promotes the cleanliness of class-rooms, and the moral and hygienic value of school baths is so great that one hopes to see them more general in this country.

It is not even yet generally recognised that dry sweeping and dusting is of very restricted value, for the reason that the most vulnerable part of the dust—its most minute and infectious elements—are not thereby removed, but are dispersed into the air from which they again settle after the sweeping and dusting process is finished. Therefore the surfaces must first be moistened; and the quickest and most thorough way of effecting this is by the use of a fine spray. A spray apparatus, which is necessary also for disinfection, need not involve an expenditure exceeding £3; and by it in less than ten minutes the surfaces to be swept and dusted may be thoroughly treated. It is the flat horizontal surfaces upon which most of the infectious matter ultimately settles, and it is therefore these surfaces which require special consideration.

The germicidal power of a disinfectant is considerably lowered by the gross dirt which may collect on floors, &c. I have satisfied myself, by experiment, that the dirt on the floor of a school class-room may be capable of reducing the germicidal efficiency of some of the best disinfectants by over 50 per cent. There is therefore an obvious advantage in first collecting and removing this dirt by a preliminary wet sweeping and dusting or by washing with soap and water.

The Scheme Suggested.—All the class-rooms should receive each evening (in so far as the horizontal surfaces are concerned) a preliminary spraying of water, to be followed by sweeping and dusting.

Frequent cleansing and disinfecting precautions are more particularly called for in the infant departments; and in such departments, upon every Saturday, the floors, seats, desks, tables and window-sills of class-rooms, the surfaces of cloak-rooms (including hat pegs), and the floors of hall and passages should receive a liberal application of hot water containing washing soda, good yellow soap and "elbow grease"; finally the washed surfaces should be sprayed with a little disinfectant solution. In making the choice of a disinfectant I should select one of the coal-tar series (izal, cyllin, &c.), capable of forming a fine and homogeneous emulsion with water and possessing a carbolic acid coefficient of at least 12; and if all vertical surfaces are sprayed with a sufficiently fine spray from below upwards there is no risk of any unsightly stains remaining upon walls, &c. It is hardly necessary to add that all drinking vessels should also be specially cleansed once a week.

Upon alternate Saturdays the whole school premises should be similarly treated, and upon every fourth Saturday some additional items should be included in the scheme. Then all woodwork to a height of six or seven feet should be scrubbed; all cupboards, ventilating openings, bookcases, and store-rooms should be cleansed and sprayed; and maps, books, &c., should be taken outside the buildings and well dusted. Although it has no exact scientific warranty, there are facts which strongly support the view that clean books are but little retentive of infection and that fumigation by formic aldehyde vapour suffices to remove the slight risk which attaches to them; but the older books, with considerable dirt at edges and dirty finger marks, such as have been demonstrated to be capable of retaining infection, should be destroyed from time to time. Subsequent to the dusting above referred to, the books should be placed in a small compartment where they may be fumigated with formic aldehyde. In the ceiling of this compartment several lines of wire may be loosely fixed, so that the books can be suspended by their covers, the pages separating to admit the disinfectant, or they may be stood upon perforated shelves with the leaves apart. On the floor of the compartment a small special lamp may be employed to volatilise paraform tablets. Any small room or very large cupboard will serve as the disinfecting chamber, and it can be readily made practically air-tight by applying gummed paper where necessary. A safe working rule is to employ paraform tablets in the ratio of two to every fifty cubic feet of space within the selected compartment and to expose the books for three hours to the disinfecting vapour.

Although I anticipate that the advice I offer may be held by some to be a "counsel of perfection," I maintain that it is nothing more than all

the circumstances demand; and it is, to my knowledge, nothing more than what has been actually performed in a few isolated cases. I believe that a spray for dust-laying and disinfecting purposes will soon be regarded as one of the most indispensable items of school furniture.

CO-OPERATION BETWEEN EXAMINERS AND TEACHERS OF LATIN.

By W. H. S. JONES, M.A.
Perse School, Cambridge.

THE report of the examiners in the Cambridge Locals comments somewhat severely upon the work in the classical section. The main charges are these:

(1) Ignorance of parsing and of the meaning of grammatical terms.

(2) Ignorance of accidence.

(3) Continuous composition was badly done, even when isolated sentences were satisfactorily translated. Connecting particles were not properly used.

These charges refer to Latin in particular.

The examiners cannot lay the blame upon new methods of language-teaching. Very few schools have adopted these methods, and it would be safe to assert that scarcely any candidates presented themselves who had been trained upon a reformed method from the first. The fault really lies with the examiners themselves, who set questions which cannot be answered by candidates prepared under present conditions. Three hours a week, or even less, are given to Latin in most secondary schools. After some three or four years of this the candidate is expected to know almost the whole of Latin accidence and syntax, and to translate to or from Latin with a practically unlimited vocabulary. What wonder, then, that the accidence is "poor" and the composition "worthless"? Only the few exceptionally bright candidates can acquit themselves with credit; the rest just pass muster or fail altogether.

The teachers also are not free from blame. I believe the majority are convinced that it is virtually impossible to prepare boys so as satisfactorily to pass the examinations, and at the same time to give them a training in Latin which shall have an educational value. No man can serve two masters. It is not surprising that to secure "passes" is usually the first aim of the teacher; his livelihood, in many cases, depends upon such success. After a fashion success is attained, not brilliantly by any means, as the report shows, but for this the boy suffers. Nearly always he acquires a deep dislike for the subject, and those who reach a fairly high level of accomplishment are few indeed. Most teachers will agree with me that, with the scanty time at present allowed, the syllabus cannot be thoroughly covered.

What could be achieved if more time were allowed I cannot say, but with the present congested state of the time-table this increase is not possible. If Latin is to be kept as an instrument of education, it is clear that both teachers and examiners must come to some agreement, not only as to the end to be achieved, but also as to the means of achieving it. Examiners would then have a just cause of complaint if the scheme were not satisfactorily carried out, and might fairly demand as a "pass" standard, not 30 or 35 per cent. of the total number of marks, but 50 or even 60 per cent. Educationally, such a change would be of the greatest value, and would go far to remove the reproach under which Latin labours.

With regard to the object of teaching Latin, there exists, even among the highest authorities, a most remarkable variety of opinions. The old fallacy of "mental gymnastics" is not yet abandoned, and great scholars have been known to advance the theory that the descent of certain modern languages from an Italian source is sufficient ground for the retention of classics in secondary schools. Perhaps, however, the majority of those qualified to judge would agree that there are two main reasons why Latin ought to be included in the curriculum of schools professing to give a liberal education. In the first place, it is well to know Virgil and some other Latin writers, both for their own sake and for the light they throw upon more modern literature. Secondly, Latin is a means of expressing thought which, for lucidity, precision, logical force and artistic brevity, is perhaps without a rival. As he masters the language, by reading it and composing in it, the pupil gradually and unconsciously assimilates these qualities, and in the present age of cheap magazines and sensational journalism they are peculiarly necessary.

If these objects were to be kept in view, it would be possible to sketch a detailed plan for the stages of Latin corresponding to the junior and senior Locals respectively. The examiners ought to declare with full particulars exactly what is to be required of the candidates. They might issue a short syllabus of the vocabulary, accidence, and syntax supposed to be known at each stage. The papers set ought to adhere to this syllabus as far as possible. If in any case such a strict correspondence be found inconvenient, as might very well occur in setting unseens, then let the word or construction be given to the candidate in a note.

An objector will doubtless urge that such a plan must lead to wholesale "cram." The thousand or so words of each stage will be learnt mechanically by heart, and the other directions for study will be misapplied in a similar way. I would reply that it would be hard to conceive of a system more calculated to lead to cramming than the one at present in vogue. Every scheme has its own peculiar dangers, and those of the proposal I have suggested could easily be reduced to a minimum. Having clearly made known the ground to be covered, the examiners could demand a fairly high standard of attainment. No credit need be given for memory work demanding no use of the intelligence; marks could be assigned for the sensible use of vocabulary and grammar in translation to and from Latin and, possibly, in free

composition. The "pass" standard could well be raised to as high as 50 or 60 per cent.

An obvious advantage from some such scheme as that sketched above is that greater uniformity would be introduced into the Latin teaching of the various secondary schools throughout the country. As matters now stand, a boy who migrates from one school to another is often of necessity placed in a class for which he is not suited, and so he suffers considerably before he begins to feel his way, even if he does not prove a complete failure. But if it were known that a new boy had reached, say, the end of the first stage, there would then be no difficulty in placing him in his proper position.

It may be urged that even though advantages accrue from such a change, practical difficulties are in the way. Difficulties, of course, would be bound to occur. Considerable organisation is quite essential, but the task must not be shirked when so much is at stake and the object is so greatly to be desired. The Classical Association is obviously the proper body to discuss the question, and to take steps to move the universities in the direction of reform. Ten years ago nothing could have been done, but there is now in existence a society which has both the skill and the power to introduce gradually but surely such reforms in classical teaching as it thinks fit.

The proposals here suggested are not my own. They have been brought forward by Prof. E. V. Arnold, who has already prepared a vocabulary for the first stage, and is about to publish a scheme of accidence and syntax representing the knowledge of the Latin language to be expected of boys and girls who leave school, or give up the study of this subject, soon after they have reached the age of sixteen. Thus a start has already been made; reformers are not groping their way in the dark. But co-operation on all sides is the great requisite for success. Teachers must come forward with plans and suggestions; the Classical Association would do well to sift these, draw up a workable scheme, and submit it to the examination authorities. It is to be hoped that in a few years, by hearty co-operation between all parties, some of the reproaches will be removed under which the teaching of classics has laboured for at least forty years.

THE CORRECTION OF FAULTY ENGLISH.

By NORMAN L. FRAZER, M.A.
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THERE has long been a feeling of uneasiness in the minds of teachers with regard to the use of faulty constructions in teaching correct English. That feeling is not altogether allayed by the sanction the practice seems to have gained from the fact that such sentences are now a regular feature of several recognised public examinations. On the other hand, in some cases the examiners themselves—less tortured, doubtless, by conscientious scruples as to method—tell the teachers plainly that this part of the examination cannot be said to produce satisfactory results. So far as those teachers are concerned who refuse to train their pupils on the lines set by the examiners, there need be little surprise at the examiners' verdict; but perhaps it is worth while to consider their point of view and to try to find out whether their guiding principles in this matter are really founded on sound bases or not.

At first sight the plain assertion that we must present to our pupils nothing false and nothing wrong cannot but command our sympathy; but it is open to argument whether in this particular case these teachers are not applying a general law, which here for special reasons loses its cogency. In a word, can it be that the old familiar fallacy of false analogy is at work? Would you dream of letting a boy see a word wrongly spelt? Certainly not. Then why let him see an English sentence wrongly constructed? The difference lies in this: spelling is a process of recording mental pictures, the correct composition of sentences is an act of reasoning. If it is replied that in the first stages sentence-making must be almost as mechanical as spelling, we are inclined to agree, and would even urge as a reform that no junior examination should require candidates to correct faulty constructions. But with older pupils there is no need to decry the practice; it affords an easy introduction to criticism and a valuable exercise in linguistics. The truth is, of course, that the value of the exercise as a criterion for correct speech will entirely depend upon the special atmosphere of the school and the home; but this will enhance rather than detract from the value of the training in every case, for a boy may be, and usually is, a very M. Jourdain in writing and speech. He may speak and write perfect English, but he may be no more able to give the reasons for his usage than the veriest Cockney who daily massacres the King's English.

It is interesting to know, as indeed we might have expected, that this question has received in America more attention than in this country. We are even told[1] that from about 1885 to 1895 it formed there one of the most difficult problems relating to secondary-school work in English. But it appears that "during the last few years the problem has in the main disappeared and may practically be regarded as settled." The authors to whom we are indebted for this information are of opinion[2] that there was right on both sides. "The young must learn to express themselves decently and intelligently, and setting them to correct their own errors or those of others is often a considerable help. . . . Text-books and systems of instruction now wisely give most attention to questions of structure, to the general method of composition, taking it mainly for granted that the teacher will by various means and on all occasions insist on the use of

1 "The Teaching of English." By Carpenter, Baker, and Scott.
2 *Ibid.*

correct English—without pedantry—and that the pupil will be led on all sides, and especially through his reading and study of literature and through his practice in oral or written composition, to acquire skill in the proper use of his native language." But even so, they add that the old method is, in their opinion, still valuable on occasion, and may even be regularly employed in the case of pupils unfamiliar with the English idiom or wilfully neglectful of it.

But it is only fair to add that other American authorities are even less indulgent in their treatment of the question. For instance, in the preface to their "Elements of English Composition,"[1] the authors refer to "a common practice of writers on rhetoric" who introduce the student "to a multitude of errors which he might otherwise have been under no temptation to commit." They add that "the unwisdom of this plan is clear and has been demonstrated over and over again by experience." However, at the end of their book—which, by the way, may confidently be recommended to English teachers—the authors have added a list of solecisms, although here, too, "care has been taken to avoid, as far as possible, the actual printing of bad English."

Before entering upon this American digression it was suggested that bad English is hardly the necessary pabulum for young pupils—perhaps, after all, that is the gist of the American contention—and little praise is to be bestowed on such papers as were set in the recent Oxford Local Examinations. Here junior candidates were given an English composition paper consisting of two parts—one an essay on very badly chosen subjects, and the other a passage of eighteen lines, in which mistakes were to be corrected and reasons given for any suggested changes. We quote part of the opening sentence to show that a good deal of care is required to make this kind of exercise tolerable. "An elephant in India who often passed through the market-place on his way to duty, was gratefully accustomed to receive a present of vegetables going by the stall of a certain herb-woman that sat near the entrance of the market." After eighteen lines of this kind of thing it is rather hard on the poor children to have to correct in another paper—called English Grammar this time—such sentences as "Let Jack and I play without you interfering," or to suggest an alternative for "Not a shadow of scandal was heard against his name." Surely the English essay would have tested these candidates' capacity for writing correct English far better than these weird perversions; for we are not so unreasonable as to expect pupils of such an age to give satisfactory reasons for avoiding mistakes which extremely few of them would make under natural conditions. Can it be that the examiners who gave "Honesty is the best policy" as one of the subjects for an English essay to these same candidates cannot imagine any candidate so unreasonable as not to retain anything that his teacher has crammed into him?

But when we pass to the senior grade of the same examination we find nothing to cavil at, for senior candidates offering English Language may certainly be expected to write "short critical notes" on any points of syntax or usage submitted to them. It is noteworthy, however, that the seniors were given classical English to criticise, while the juniors were put off with made-up perversions. It is one thing to ask a boy of eighteen to discuss such a sentence as "Man never is, but always to be blest," but quite another thing to worry a decent child, by asking him to correct "You and me will take a walk."[1]

Closely connected with this matter of faulty English is the wrong use of words, and very much the same course may be adopted; that is to say, improprieties of diction will be best studied when occasion arises—in the course of the pupil's writing or speaking. But we quite agree with the authors of "The Teaching of English,"[2] recently published, that "during one term of the four years' course some regular lessons may with advantage be given on the changes of meanings in words, the different shades of meanings in synonyms, and similar study; . . . useful lessons can be based on chapters from books like Bradley's 'Making of English,' Trench's 'Study of Words,' Taylor's 'Words and Places,' Abbott and Seeley's 'English Lessons for English People.'"

The authors are to be complimented on the excellent sources they indicate to their readers; but there may be some who would be glad to know of books of a different nature, likely to help them in preparing pupils for examinations in which this kind of question is set. All that the pupils require is a good standard dictionary, and we can imagine time being very profitably and pleasantly spent—to take instances suggested by the authors of the book just mentioned—in studying the misapplication of words like aggravate and transpire, or in classifying the different shades of meaning in a group including such words as jocose, funny, ludicrous, and ridiculous. By a natural extension of this method the pupil might be required to test his new knowledge by composing original sentences showing correct use. A very convenient series of exercises of this sort will be found in "The Teaching of English," by Carpenter, Baker, and Scott, to which we have already referred. We notice there very many useful groups—deprecate, depreciate; practical, practicable; strange, queer, odd, quaint, funny, weird, to take one or two at hazard—and we may especially commend pp. 380–390 of the same book for a useful appendix of solecisms, with plain, straightforward explanations.

Dr. Foat, in his recently published "Grammatical English," has an interesting chapter on "Formal Analysis of Sentences," in which he remarks that "it happens that a very large

[1] "Elements of English Compo-ition." By Gardiner, Kittredge, and Arnold

[1] Mason's "New English Grammars, Junior."
[2] "The Teaching of English." By Roberts and Barter.

number, probably a majority, of difficult passages and incorrect statements offered in such tests as the (recent) English examination papers to candidates for matriculation in the University of London are of the kind discussed in this chapter."

There is no reason why properly trained pupils —that is, pupils whose teachers have an adequate amount of time assigned for English work—should have a text-book placed in their hands to prepare for this kind of test; but if for any reason a text-book is found desirable, Nesfield's "Oral Exercises in English Composition" (Macmillan) will provide what is required as well as any book we know. In it there are exercises of two kinds (to be done orally and at sight) in rearranging and recasting sentences. The first class consists of examples chiefly coined; the second of genuine quotations. There are also exercises on the use and discrimination of words; and here it is pleasant to note that there are no faulty examples. If it is a teacher's sad fate to have to prepare backward candidates for the lower branches of the Civil Service, he may revel in W. S. Thomson's "English Composition," where he will find a hundred and fifty pages crammed with all kinds of possible and impossible errors. For his own use the ordinary class teacher will find stimulating reading in the fourth chapter—especially in part ii., on "The Metaphor"—of Brockington's "Elements of Style" (Arnold). But by far the most exhaustive and interesting of recent works on correct usage is "The King's English" (Oxford University Press). Here in an eminently readable form the authors have pilloried—always without malice, as they claim—every variety of error, and have discussed with the liveliest humour and real illumination the usage of a surprisingly large number of writers.

The conclusion of the whole matter would seem to be that no good result is to be obtained by continuing to set perversions for junior candidates to correct, but that senior candidates may well be asked to criticise any constructions employed by reputable authors. Perhaps it is not too much to hope that one day soon the English Association may find time to tackle this question of school examinations and lay down with some precision the lines on which examiners should work in setting reasonable papers in English Language—for it seems to take some examiners a long time to adjust their tests to the work of the schools. The good work that the Association has already accomplished is an earnest that its opinion in such a matter would be given with authority and received with respect.

Highroads of History. Sixth Book. 336 pp. (Nelson.) 2s.—We have already noticed the previous books of this series, the chief feature of which is the reproduction, sometimes in colour, sometimes in black and white, of historical pictures by the best artists. The letterpress in this book, which covers the dates 1688 to 1907, is closer to history than in some of the earlier ones, and contains sketches of the more obvious events, military and otherwise, of modern British history.

SCHOOL AS A TRAINING FOR LIFE AND LIVELIHOOD.[1]

By CLOUDESLEY BRERETON, M.A.

I DARESAY some of you boys wonder what is the good of going to school at all. I remember well how, as a small boy of nine, I sympathised with that unknown poet of the class-room who declared that multiplication was vexation and division was as bad, while "substraction," as Alice in Wonderland calls it, was almost equally detestable. When I was somewhat older I was introduced to the uses of *ut* with the subjunctive. In those days the introduction generally took place with black rod in waiting. It was altogether a very solemn and formal affair, and woe betide the boy who stumbled. Had you looked into the boys' books of those days you would have found scribbled in among other passages—a very bad practice, which I am sure is unknown in your school—the following forlorn couplet from another nameless contributor to the schoolboys' anthology: "Moods and tenses bother my senses." As for *oratio obliqua,* I am sure it was popularly regarded by the majority of the form as a mere invention of those who wrote Latin exercise-books for the sheer delight of "stumping" or "catching out" the small boy, or running him in for a lot of extra impositions. In fact, I am afraid we are all agreed with the German writer who said the Romans were lucky in not having to learn the Latin grammar, as, if they had, they would never have had time to conquer the world. I don't know if any of the upper boys here have already tackled the Odes of Horace. If you have, you may remember an eloquent passage in the first book on what a toil and moil it was for the Greeks to conquer the Trojans. Well, once in one of the lower forms we had all to enter for a compulsory competition in Latin prose. Each boy was obliged to furnish his composition with a motto; and one boy, I fear, reflected a somewhat widely spread opinion by choosing for his device the first two words from the above-mentioned passage in Horace, *Quantus sudor,* which, for the benefit of parents present, I will translate into schoolboy English—"What a sweat!"

Luckily for myself I was able to go to school again when I was grown up, and I then learnt a good deal I never suspected before. I was in fact a very old boy, being over thirty, and I was placed in a class with boys of sixteen and seventeen. I could tell you some amusing stories about that, but what I want to say here is that one of the subjects we had to study was philosophy. That sounds rather a hard word, but it is very simple, when you take the lid off and look to see what's inside. It really teaches us that we must try to be *something* and to do *something,* and that one of the best things for teaching us to try to be *something* and do *something* in the world is the school itself.

[1] An address to the boys of St. John's Preparatory School, Hampstead, at the Annual Prize Giving, July, 1908.

Fortunately nearly every boy starts by meaning to be something. I fancy most of you would agree with me that you have one and all fervently desired at some time in your lives to become an engine driver. I expect that most of you have got over your first love and that you are in the stage of wishing to become soldiers, or sailors, or explorers, and possibly even pirates. So long as a boy desires to become something, if only a pirate, I feel he is all right. He will probably give up the idea of the pirate sooner or later for something better, and his ultimate ambition may be, as I actually know in one case, to become Archbishop of Canterbury. The mischief really begins when a boy gives up the idea of wishing to become something. Then I grow frightened about him and fear he may turn out a "slacker," or a loafer, or a wastrel.

You have really such a big choice before you, if you choose early enough. We cannot all be scholars and fellows of colleges, but your readings in history will suggest to you a number of possible careers, as statesmen, as great lawyers, as great churchmen, as generals, as admirals. Your private reading will suggest the idea of becoming great merchants or great men of business, or great naturalists or men of science. Perhaps your very woodwork and carpentry will show you have in you the makings of a great engineer, or your drawing will suggest your striving to become a great designer or artist. One boy may read "Admirals All" and long to be a Drake or a Nelson; another may pick up Darwin's "Voyage of the *Beagle*" and seek to follow in his footsteps; a third may read some book on astronomy and determine to be another Sir Robert Ball. Don't mind aiming high: you are all the likelier to end up high in the end, if you only determine to put your shoulder to the wheel once you start, however low down it may be. But even if the school does not suggest to you what you would like to be, there is always your father's profession, or you have a boy friend in the navy, or your people have always had someone in the Church—all these things will help you to make a choice.

But whatever career you choose, there is always one thing that the school can help you to become. We can't all win prizes for work or athletics, but we can all try to do our best whether in the class-rooms or the playing-fields. "We can," as my friend Henry Newbolt says, "play up and play the game." We can all try, in a word, to become men. School is not merely to train you for the professions: it is meant to be a form of training for all boys in *manhood*. It is every bit as much a form of training as training for the sports, except that it lasts for years instead of weeks and its effects are therefore far greater.

The ordinary boy may say: "Why should I punish myself? I can't win the races: Jones Minor can always beat me. I can't be first in the form: Smith Major always gets all his sums right. I'm no good at cricket, and I shall never get into the football team. Why should I try to be something and to do something when I shall never be able to do anything out of the common? Wouldn't it be much nicer and more comfortable just to 'slack' and take it easy, or at any rate just do enough to keep out of the imposition book? My people are well enough off to keep me whatever happens."

Now remember first this fact. The people who appear to me to succeed in the world are those who have character and grit and stick to things. "It's dogged that does it," as General Buller said. Or, in other words, the tortoise as often as not beats the hare. The brilliant boy who thinks he has done enough when he is twenty-one is not the successful man at forty. It's the plodder who seemed to have only average brains when at school who is as often as not in the front at that age, because he has "trained on," as we say. Every year he has become a little better, until he is now in the first flight. It is the infinite capacity for taking pains which makes him only second to the man of genius. Do you think that Mr. Joseph Chamberlain would have gained the reputation he possesses in the political world if he had not been able to work from ten to twelve hours a day for the greater part of his life?

But let me get back to that boy who says he is going to take it easy because his people are well enough off to keep him whatever happens. That boy thinks he has a right to be idle. Has he?

Now England, if I remember aright, was ranked at the beginning of Edward III.'s reign only sixth among European Powers, coming, I fancy, even after Portugal. Where would you place England to-day? First, or at least among the very first. And why? Was it because the average child of the well-to-do who lived at that time said, "When I grow up, I shall have enough to live on, so I shall do nothing, or at best take it easy"? I imagine, if he had done so, England would not even be sixth on the list to-day. I very much doubt whether she would be on the list at all, having been swallowed up by France or some neighbouring Power. What has made England is that the people of that day and those who came after them held very different views. They considered that the greater a man's possessions, the greater his duty to the State, and that when his ancestors had done so much for him, the only way of repaying the debt was to do more for those who succeeded them. One can sum up all this in a phrase we owe to the French, *Noblesse oblige*, or "Rank has its duties." And it is just because the English aristocracy have held fast to that motto that they have never gone under as the French aristocracy went under at the time of the French Revolution. Your very school, with its motto *Labore et honore*, is arranged to show that rank has its duty as well as its rights and privileges, so that when you go out into the world you may find that the lessons of the school are true of the world as well. What would you think of a prefect who swaggered over the other boys, availed himself of all the extra rights and

privileges a prefect has, yet never attempted to keep order, or stop bullying, or pull up any boy who was doing wrong, in a word, who never cared a fig for his duties as prefect? Would you think he was playing the game, that he was really doing himself or the school any good? And if all the prefects in the school took to acting as he, what sort of school would it be? In the same way what sort of country, what sort of State would it be, if all the leading men in it neglected their duties and only enjoyed themselves? Would it not very soon come to grief?

Every boy, whether a duke's son or a cook's son, to use Kipling's phrase, has got to try to be something, and do something for the country which has done so much for him, and, if he be born in a certain position, for the family which has done so much for him and given him such a good start in life compared with many, whether it be in rank or wealth. Be certain the only way of repaying that double debt is a firm determination to do something for your family and for the State. Remember that so long as you are a worker, whether as a merchant or a Cabinet Minister, you are paying off the debt. It is only the person who takes no part in the public or private business of the country who does not acknowledge the debt. Some French boys were once discussing what their fathers did every day. One boy said: "My father is on the Stock Exchange." Another said: "My father is in the Government." A third said: "My father looks after a regiment"; and a fourth: "My father has a big business in the city." One little boy hesitated a long time, and then said: "Well, my father goes to the club." Well, there is no harm in going to clubs: we all go to clubs nowadays. But I ask you which of those French people were doing most for France and for their family to which they owed so much?

One word in conclusion, and here I would speak to parents even more than to boys. I am perfectly certain that in far too many cases we in England put off until too long or too late the choice of a profession for our boys. While the French or German parent induces his son to choose early and encourages him to choose, the English parent too often adopts a policy of drift, waiting for something to turn up, with the result that the public-school boy's head is much fuller, as a rule, of vacation than vocation. Yet I would remind you that owing to universal education never was the struggle to get on harder than to-day, never was the competition more keen. The wise parent will, therefore, in concert with his boy (it is essential that the two put their heads together), try to select some career before the boy leaves school, and encourage him to work for it and take an interest in it. There are many exceptions, but the Warren Hastingses and the Napoleons began their day-dreams very early. As the old Latin grammar tag says, *Solent diu cogitare qui magna volunt gerere*—"They are wont to ponder long who wish to do big things in the world"—and the same is true for the rank and file: the boy who has made his choice beforehand will find entrance into the career he has chosen all the easier when the time arrives, and his success in after-life will be all the greater for having so early chosen his vocation.

THE SUPPLY OF TEACHERS FOR ELEMENTARY SCHOOLS.

By W. J. Elliott, M.A.

THE introduction of compulsory attendance at school of all children attaining the age of five years was not accompanied by any national scheme designed to provide an adequate number of qualified teachers. No such scheme has yet appeared: the provision and education of teachers are still in the hands of local authorities and are subject to the exigencies of local finances. No searching inquiry as to the possibility of obtaining, throughout the country as a whole, an adequate supply of qualified teachers appears to have been made, although since compulsory attendance was enforced the supply has never been sufficient, and the annual demand from several causes must tend to increase. In ten or fifteen years the removal by superannuation of an annually increasing number of certificated teachers must require a considerable increase in the number annually admitted. The growth of the population, the tendency shown by local authorities to remove married women from staffs, and the practical removal of pupil teachers as teaching units, all add to the necessity of an increased supply of qualified teachers. Further, largely increased numbers will be required if the size of classes is to be reduced and if unqualified teachers are to be replaced. But there are limits to the supply of teachers which cannot be neglected in any general consideration of the question. Even if funds were available for staffing elementary schools with qualified adult teachers at the rate of one teacher to every thirty pupils, it would still appear to be impossible to obtain the necessary number of teachers.

In a Report on the Instruction and Training of Pupil Teachers, 1903–1907 (Cd. 3582), issued by the Board of Education in 1907, it is computed that in 1906 there should have been admitted in England, exclusive of Wales, 21,000 pupil teachers in order to provide for the increase and improvement of staffs, and to allow for wastage. The data on which this number is based are given at length in the report. It will be sufficient here to state that the calculation is made on the basis of the gradual removal of supplementary and other unqualified teachers, and a gradual reduction in the size of classes until the ratio of one adult qualified teacher to thirty pupils is attained. From 21,000 pupil teachers it is calculated that 13,500 adult qualified teachers would be obtained in 1909. This, then, may be taken as the estimate of experts of the number of pupil teachers actually required in 1906, and, subject to an increase proportionate to the in-

crease in average attendance at schools, will represent the number required each year. The introduction of the "bursar" system will not affect the estimates as to the numbers of qualified teachers annually required, although that system will almost certainly reduce the wastage during the qualifying period.

Assuming that 13,500 adult teachers are required to qualify in 1909, it will be well to consider what possibility there is of this demand being satisfied. The proportion of male to female teachers may be taken as one to four. Consequently, 10,800 female and 2,700 male teachers should qualify. According to the census of 1901 the population of England (exclusive of Wales) between the ages of sixteen and seventeen was 622,479—310,473 boys and 312,006 girls. One fact also was made evident by the last census, viz., that the number of children at each year of age between the ages of ten and seventeen varied within small limits only—in fact, the average number for each year of age between five and seventeen was, in round numbers, 314,000 boys and 317,000 girls. No appreciable error, therefore, will be made if the number of boys between sixteen and seventeen in 1906 be taken as 310,000 and of girls 312,000. This number is, of course, increasing annually, but not at such a rate as to vitiate the ensuing calculations. To obtain not less than 10,800 female and 2,700 male teachers in 1909 and proportionate numbers in successive years would mean, therefore, that one in every thirty girls and one in every 115 boys between the ages of five and seventeen should be capable of passing, at the age of seventeen to nineteen, examinations qualifying for employment as adult teachers in elementary schools. Experienced teachers will agree that one in every thirty girls at school in England could not so qualify. But assuming that under present or future conditions of education such a proportion of girls could reach the standard of a qualifying examination at the age of seventeen to nineteen, how many of the number would be unable or would decline to become teachers in elementary schools? and of the residue how many would be physically unfit? Moreover, it is doubtful whether one in every thirty girls would have the mental and moral qualities that should be required of the teacher. The proportion of boys (one in 115) does not appear at first sight to be excessive, but the number of openings in life more attractive than teaching is much greater for boys than for girls. There is at least a probability, therefore, that the proportion of boys required will be as little likely to be obtained as the proportion of girls.

If, then, the standard of one adult qualified teacher to thirty pupils is to be reached, the ratio of the number of teachers required annually to the available population appears too high to be attainable, at least for many years. But even if attainable, it is doubtful whether it would be advisable to withdraw so large a proportion of those boys and girls, who are educationally the best equipped, from other careers for the purpose of elementary-school teaching. There are, however, other considerations which tell seriously against the probability of obtaining 13,500 or a larger number of newly qualified teachers per annum, or of providing one qualified teacher for every thirty scholars.

The general increase of local rates for purposes of education since the adoption of the Education Act (1902) has led to grave discontent in a large proportion of rating areas. If further large expenditure is required, cogent reasons must be placed clearly before local authorities, and additional funds should be supplied by the Treasury. If, however, the standard of staffing elementary schools is in the future to be one qualified teacher to thirty pupils, great increase of expenditure will be necessary, as the following figures will show. The average salary paid throughout England and Wales to certificated and uncertificated teachers, head teachers and assistants included, was almost exactly £90 per head for the year 1905–6.[1] That amount will now be greater owing to the system of automatic annual increases of salaries. But taking the average salary as £90, the cost per child of the teaching staffs, excluding all expenditure on pupil teachers or student teachers, and assuming that there is one qualified teacher to thirty pupils, will be £3 per annum. The average cost of the teaching staff per child for forty-five administrative counties during the year ending March 31st, 1907, was £2 6*s*. If this sum is increased to £2 10*s*. per child to allow for the somewhat higher salaries and better qualified staffs in London and certain boroughs and urban districts, the estimate will not be too low. The effect, then, of staffing schools at the rate of one qualified teacher to thirty children will mean an addition of at least 10*s*. per child to the cost of salaries of teachers, or a total increase of annual expenditure throughout England of £2,500,000. But this sum would not meet the total necessary additional annual expenditure. It would be necessary to provide class-rooms to accommodate the extra classes in almost all schools, involving large capital expenditure on buildings, with a further annual charge, difficult to estimate, but not less than 1*s*. per child, or £250,000. The additional annual expenditure throughout England would be therefore at least £2,750,000.

The cost of the preliminary training necessary to provide an annual supply of 13,500 or more qualified teachers has also to be considered. The cost to Imperial funds need not be dealt with here, but the demands on local rates will be too great to be neglected. The Board of Education has wisely decided that the old pupil-teacher system has, on the whole, failed to produce teachers sufficiently well equipped, and modifications in the methods of training boys and girls who aspire to become teachers have been introduced. With few exceptions, such candidates

[1] *Vide* Statistics of Public Education, 1905–6–7 (Cd. 3866), tables 16 and 17.

will be educated at secondary schools for a longer or shorter period. If the "bursary" system is generally adopted, this period will be not less than four years. In the case of pupil teachers the period may be one year or the equivalent of one year, but with a number of exceptions becoming more limited each year the length of the secondary-school life of pupil teachers is at least three, and generally four, years. The latter will almost certainly become the normal period.

In order to obtain not less than 13,500 qualified teachers per annum a greater number of boys and girls must enter secondary schools at the commencement of each four-year period with the object of becoming teachers in elementary schools, for a number will fail to qualify for various reasons. As stated above, the Board of Education calculates that 21,000 pupil teachers should have been admitted in 1906 to provide 13,500 qualified teachers in 1909. But if the wastage during the whole period of training is taken to be about 15 per cent., the number of candidates at the beginning of a four-year period of training should be not less than 16,000, or 5,000 less than the Board's estimate for 1906. Assuming that not less than 16,000 boys and girls enter secondary schools each year for a four years' course before attempting to qualify as teachers, there would be in attendance at such schools in England 64,000 boys and girls who desired to become teachers in elementary schools. This number should not exceed 25 per cent. of the total secondary-school population, if secondary schools are to retain their status as schools for preparation for all careers, and not schools for one type of scholar in particular. If, then, this condition is to be fulfilled, the total secondary-school population should be 256,000, with a further addition to allow for those attending public and private schools which would not provide candidates for employment in elementary schools. A total estimate of 300,000 would probably not be excessive.

Taking the population of England at the present time to be 32,000,000, this estimate would give a proportion of 9·4 per thousand of the population—probably almost double the proportion at present in attendance at secondary schools. Moreover, with comparatively few exceptions, teachers will be trained in secondary schools recognised by the Board of Education for receipt of grants. The number of scholars in attendance at such schools for the year 1906–7 was about 115,000,[1] and apparently sixty-three more schools are claiming grants for 1907–8. The accommodation of recognised schools during 1907–8 may, therefore, be taken as 125,000; but, assuming that 15,000 additional places can be provided in existing schools, whether recognised or not, 116,000 places would remain to be provided if those who are training to become teachers in elementary schools are not to exceed 25 per cent. of the number of scholars in attendance at such secondary schools as will provide candidates for employment in elementary schools.

The cost per place in secondary schools is from £40 to £50 for building and equipment; to provide 116,000 places, therefore, would involve, at £45 per place, a capital expenditure of £5,220,000 and an annual charge of about £320,000. The annual cost of maintenance per head will depend upon the fees charged and the kind of school, but on an average will probably not be less than £3 per head, requiring a total charge for maintenance of £348,000. The total annual expenditure will therefore be about £670,000. There would also remain the problem of increasing secondary-school staffs by about 5,500 units without entrenching on the supply of elementary-school teachers. It is probable and certainly desirable that the secondary-school accommodation in England should be increased to the above extent at least, but the increase will have to be gradual.

It seems clear, then, that to obtain the estimated number of qualified teachers per annum, it will be necessary (1) for one in every thirty girls and one in every 115 boys at school in England to qualify as teachers in elementary schools, and (2) for local authorities to provide for an increase of expenditure on secondary schools of about £670,000 per annum. Further, if the standard of staffing elementary schools is to be one qualified adult teacher to thirty scholars, local authorities will find it necessary to increase the expenditure on elementary schools by at least £2,750,000.

The estimate of the number of teachers annually required may be considered too high, but it has been issued by the Board of Education, and is deduced from the statistics in the possession of the Board on the assumption stated above, viz., that schools will in the future be staffed by qualified adult teachers at the rate of one to every thirty scholars. If the estimate is accepted, then it seems impossible, under present conditions, that this rate of staffing can be attained, unless there is a change in the present system of elementary education of such a kind as to reduce the number of children at school by raising the age of admission or otherwise. It is doubtful whether such a change would be welcomed, but the alternatives seem to be either very large classes or the continued employment of supplementary and other unqualified teachers in increasing numbers. To lower the standard of qualifying examinations or to return to the old pupil-teacher system would be a retrograde step and, moreover, would not increase the supply materially.

The problem of the supply of teachers cannot be solved by temporary measures, nor can the supply be considered ample because in any one year more teachers have qualified than local authorities, under present conditions of large classes and of classes taught by supplementary teachers, are able to employ. The improvement

[1] Report of the Board of Education, 1906–7 (Cd. 3862), p. 69.

of staffs is first a question of finance, but is finally limited by the supply of teachers; and the important question is: Can a nation with an increasing population supply an adequate number of well-qualified teachers for the children who are compelled to attend school, each for a period of from seven to nine years? Until this question can be answered in the affirmative, further legislation for increasing the length of compulsory school life, whether in the day schools or in evening schools, would surely be unwise, if not unfair to both children and parents.

THE THIRD INTERNATIONAL DRAWING CONGRESS.

THE Great Hall of the London University, South Kensington, was filled daily during the first week of August by the vast numbers of art teachers and art workers gathered from all quarters of the globe to take part in the much heralded third International Drawing Congress, the first and second congresses having been held in 1900 and 1904 at Paris and Berne respectively. The object of the conference, broadly speaking, was to discuss ways and means for the better understanding and organisation of art teaching, which was aptly described by Mr. E. R. Taylor, of Birmingham, as "the Cinderella of education, admitted only on sufferance here and there, and not as an essential, developing and training a mental and spiritual faculty, but only as a relaxation from more strenuous work, as an aid to other studies, or as being of financial value to our manufacturers."

The eighteen hundred members and delegates included representatives of all grades and branches of art teaching, from the heads of departments of the principal institutions of London, Paris, New York, and the great provincial and Continental art centres, to the teacher of drawing in the elementary school and kindergarten.

The conference was opened by the president, the Earl of Carlisle, who, after welcoming the foreign delegates, delivered an inspiring address on the aims and aspirations of the congress. The list of papers to be read, of which there were forty-five, in addition to sectional meetings and special lectures, presented a bewildering array of subjects, dealing with art teaching in all its ramifications, including such matters as "Methods of Disseminating Knowledge and Love of Art," "Art Co-ordination," "The Training of the Sense of Colour," "Codification Internationale des Signes et Symboles employés dans le Dessin," and many others of national and international importance. Many of the papers were of extremely high interest and provoked considerable discussion. To attempt to summarise the proceedings or to analyse and compare the many well-considered and in some cases brilliant schemes would be an undertaking beyond the province of this article; it may, however, be permitted to refer to one or two which may be considered to have special bearing upon the work of secondary and public schools.

Several papers on the training of the art teacher dwelt upon the one-sidedness of the education of a drawing teacher, due to the development of the artistic faculties at the expense of neglected general knowledge. A storm in a tea-cup was raised by the assertion that a science teacher may justifiably take precedence of an art teacher by virtue of his superiority in general culture—the result of the broader basis of his general education. This contingency is provided against in America and in many places in Europe, the student of art being required to continue his general studies instead of, as is the rule in England, dropping every other subject directly he begins to specialise in art. The teachers' training colleges abroad, too, provide for a far more thorough and systematic training in art than do our training colleges at home, where, to judge from the report of the special committee which has been considering this subject, art appears to be treated in a very haphazard manner, or else to be neglected altogether.

Considerable controversy arose over the question whether it was the function of the art teacher to teach *drawing* or *art*; whether the subject was to be treated from a utilitarian or an æsthetic point of view; to be considered merely as hand and eye training, content with the acquisition of skill in perception, manipulation, and reproduction, or whether it was to go further and aim at the cultivation of taste and appreciation of beauty in nature and art. The ideal course naturally would be a combination of the two, on the lines of Mr. H. T. Wyse's able paper on the subject, bearing in mind always that *sound drawing* is the foundation of all art, a fact which is apt sometimes to be overlooked by the advocates of the æsthetic principles, whose anxiety to create an "art atmosphere" frequently results in the neglect of the drawing, as was evident in some parts of the exhibition. Sir W. B. Richmond's remarks on drawing, though directed to students of the art schools, may be very appropriately quoted in this connection:

> . . . To achieve such a result [*i.e.*, a higher standard of work], drawing, which the great painter Ingres called the "probity of art," must be strenuously and scientifically taught. . . . In our schools I would have much more efficient, again I say, scientific, drawing, hard though it may appear to be, and much less of the clever sketching which is at present all the vogue in every school that I have visited. We may depend upon one thing and make it an axiom: "The student trained upon scientific methods will always improve; the student who relies upon dexterity will infallibly deteriorate."

And in conclusion Sir William said:

> Stimulate the general public to discriminate between what is true and what is false in art, and the student to understand that before he can run he must walk, and that the only means by which he can be provided with a successful after-career as an artist, in whatever branch he

may choose, is by scientifically, not empirically, mastering the most difficult art of drawing with combined accuracy and feeling.

Mr. Catterson Smith, of Birmingham, spoke of the importance of memory drawing, and described the practice they followed in Birmingham of combining memory drawing with museum studies; he characterised the practice of devoting one lesson a week to memory drawing as useless, and advocated the use of organic forms as providing a far more valuable exercise than those of mechanical or geometrical construction.

An official account of the transactions of the congress, with verbatim reports of the papers read and of the discussions, will be published in November; it may be obtained from the secretary of the congress, price 5*s*.

The exhibition of drawings and works of art and craft, held in connection with the congress in the galleries of the Victoria and Albert Museum, was undoubtedly the most impressive exhibition of the kind ever organised. It was stupendous, embracing specimens of students' work from forty-two countries, and illustrating in nearly all cases the complete gamut of the work done, from that of the smallest infants' class in a rural school to that of the highest art educational institution of the country. It would have been an advantage, perhaps, if the number of individual exhibits could have been reduced without making the display less representative, for the effect was at first bewildering, and it required a second, third, or fourth visit to realise thoroughly the import of the amazing mass of work on view.

That an exhibition so unique in its way, so admirably organised and arranged at what must have been an enormous cost of time, labour, and money, should remain open for rather less than a month is a matter for sincere regret; it would have vastly extended the sphere of its usefulness if the exhibition could have remained open for a longer period, or if it could have been transferred, bodily or in part, to some of the large provincial centres.

On those who were fortunate enough to see it this remarkable collection of works must have made a deep and lasting impression, and, judging from the number of note-books in active requisition, the results will undoubtedly make themselves evident in the future of art teaching throughout the world.

Although there were exhibits of absorbing interest in all departments, it is with secondary- and public-school work that these notes are concerned. On comparing the work from the secondary schools of the United Kingdom (the work of our great public schools was conspicuous by its absence) with that from the corresponding types of foreign schools, one was immediately impressed by the remarkable similarity of aim and method existing throughout the various countries; the differences were chiefly in the details—the type of models used in object drawing and the character of the ornament in decorative work bore the stamp of the individuality of their country of origin—but in other respects the systems of art instruction, particularly in the European countries, seem to be running upon remarkably parallel lines.

Such an exhibition as this by its very nature invites comparisons, and in this case, though she holds her own remarkably well, the impression gained is not always in favour of Great Britain. At the outset one is struck with the sense of dignity and sincerity which appears to pervade much of the Continental work. This may have been due to the disposition and arrangement of the drawings, upon which a vast amount of thought and care had obviously been devoted, or it may have been the effect given by the scale to which most of the drawings are executed. The keynote of the whole series of work appears to be "size"; everything is drawn to a large scale. A simple model, say a basin, which would here be usually drawn on a sheet about, say, 10 in. by 8 in., is drawn by a boy in Amsterdam or Munich to more than twice that size. The advantage, both as regards the appearance of the drawing and in the benefit accruing to the boy, is clearly with the larger drawing. This characteristic may be said, with few exceptions (of which France is a notable one), to run through most of the Continental work, our work by contrast looking weak and ineffective.

The drawing from the French lycées was singularly disappointing, representing as it did the worst traditions of art teaching of twenty years ago; their inferiority in this department of their work is as pronounced as is their superiority in the life, painting, and other advanced sections. A feature of the object and nature drawing from Germany, Hungary, Switzerland, Denmark, and Sweden, in addition to the large scale before mentioned, was the vigour and accuracy of the drawings. Some slight indication of this may be found in the handbook to the exhibition, on pp. 93, 104, 105, 106, and 107. The drawings are frequently done on tinted paper with charcoal or crayon, with the shadows broadly suggested and the high lights touched in with white; or, again, on white paper, shaded in pencil or crayon, with a wash of local colour over the whole; a purely conventional treatment and remarkably effective (the Scottish Memorandum notwithstanding) by reason of their sound draughtsmanship and commanding size. One may presume that they will be as valuable educationally as those met with in other parts of the exhibition, where the pupil is evidently expending on his struggle with the relation of tone values and the manipulation of colour the energy which would be better employed in the endeavour to draw the object correctly.

The United States exhibit formed a collection of extreme interest and of the highest educational value, of which it would be hopeless to attempt to give in this article even the briefest summary.

Broadly speaking, it illustrated with great completeness the scheme of work outlined by Mr. Arthur Wesley Dow, professor of fine arts, Columbia University, New York City, in his paper on the training of art teachers. The principal features of the scheme are illustrated in the handbook to the exhibition, and the paper will appear in the Transactions of the congress in November. The handbook to the exhibition, to which allusion has been made, is published by the congress as a photographic and annotated record of some of the principal features of the exhibition. In addition to the admirable reproductions of many of the exhibits, it contains articles descriptive of the schemes of work of some of the more important art centres: on "The Royal College of Art," by the editor, Keighley Snowden; "L'École Nationale des Beaux-Arts," by Paul Colin; "Art Instruction under the London County Council," by A. C. Christie; "Art Education in Scotland," by F. Delgaty Dunn; "The Leicester Scheme of Correlation," by B. J. Fletcher; "The Bradford School of Art," by C. Stephenson; and on "The Birmingham School of Art," by W. Catterson Smith.

The handbook may be obtained from the secretary to the congress, price 3*s.* 6*d.*

Space does not permit of more than a brief reference to the British sections of the exhibition. In many cases these suffered from overcrowding; they would have appeared much more effective and would have illustrated their individual schemes equally well with half the number of exhibits. As it was they gave emphatic illustration of the valuable work that is being done in this country, and were subjected to much close and rigorous inspection on the part of the foreign and colonial visitors.

Mention may be made, in conclusion, of two features observed in the foreign sections which recommend themselves for adoption in schools where some simple kind of craft work may be carried out. The first is from Germany, and consists of using strips of linoleum in the manner of wood-blocks, for obtaining colour prints of one, two, or three colours. The linoleum lends itself admirably to the process, the cutting being done with an ordinary penknife. Some results are illustrated on p. 95 of the handbook, and it will be seen that the subject gives abundant scope for originality, besides being an excellent introduction to the mysteries of colour printing.

The second idea is from Zurich, and consists of a form of textile decoration known as "Batik." The ornament is painted on the linen or other material with melted wax. When the wax is hard the stuff is dipped in dye; the parts coated with wax naturally refuse the dye, so that when the wax is melted off the design remains in the original colour of the material. The process appears to offer a pleasing alternative to needlework or embroidery in girls' schools; some typical examples are shown on p. 98 of the handbook to the exhibition.

OPEN-AIR SCHOOLS.

THE modern open-air school is not to be regarded as simply a reversion to some of the primitive educational conditions, but rather as an instance of the way in which movement along the path of progress is confronted by discoveries. The Elementary Education Acts from 1870 onwards made school attendance compulsory upon all children within the limits of the school age. But they had not long been in operation before it became evident that some children were unfitted, mentally or physically, to benefit by the instruction provided under ordinary conditions, or unequal to the strain involved in endeavouring to keep pace with the child of average capacity. The more obvious cases, the blind and the deaf, the mentally deficient and the epileptic, were first noted and separated from their fellows, and relegated as far as possible to special institutions suited to their needs. Further and closer examination of the nation's educational material established the existence of a still larger body of individuals whose unfitness was clearly due to a simpler if less tangible kind of disability—various forms of invalidism generally characterised by anæmia and malnutrition, essentially temporary in their nature, but acting none the less as a permanent bar to educational advancement so long as the causes inducing them remained in operation.

In relation to the grave problems thus revealed, the three reports just issued by the London County Council[1] afford much interesting information. As regards epileptic children, the Council has come to no decision on the several important points submitted to it, but publishes the report compiled by its educational advisers for the benefit of the public, in view of the general interest taken in the question. It appears that Germany is the country which has made the most extensive provision for epileptics. There are about fifty institutions receiving persons of this class—some in addition to other patients, while about twelve devote themselves to epileptics exclusively; but there appear to be no institutes which receive epileptic children only. Contrary to the views promulgated a quarter of a century ago, it is now regarded, in the light of riper experience, as neither desirable nor possible to separate the treatment of curable and incurable, sane, feeble-minded, and deranged epileptics. The most suitable and practical method has proved to be that which brings all these classes within the compass of one large institute, treating the various groups, arranged according to age and condition, in special departments in as individual a manner as possible.

Thus the Berlin Municipal Institute for Epi-

1 "Open-air School, Bostall Wood (Plumstead)." 1*s.*
"The Training of Mentally Defective Children in Germany." 6*d.*
"The Instruction of and Accommodation provided for Epileptic Children in Great Britain and Abroad." 6*d.*
Reports of the Education Committee of the London County Council. (P. S. King and Son.)

leptics at Wuhlgarten accommodates 1,300 epileptics, including 100 children. It is organised on the lines of a "colony" covering a large expanse of ground, partly wooded, partly meadow-land, ample spaces being left between the various buildings. The department for epileptic children is completely separated from contact with other epileptics; it is entirely self-contained, equipped with all that is necessary for an independent household, including apartments for teachers, special gymnasium, &c. As is well known, the disease is one which presents all grades of severity. Of the 108 children, not more than sixty-four are capable of instruction: these latter must be removed from all contact with imbecile children, who need to be cared for in a special department for incurables. The time-tables of the ordinary classes correspond to the lower and middle standards of elementary schools in rural districts. The keynote of instruction is individual treatment, the formation of ideas, and the acquisition of knowledge by object-lessons, concrete examples, and practical demonstration: with singing, gymnastics, organised games, and walks. Mental overwork is fatal to successful treatment. The average number in a class ranges from fifteen to twenty-four. Constant supervision and constant occupation are requisite in combating "the epileptic character"—a condition of mind which shows itself in a number of ways inimical to harmonious life in a community. As a matter of fact, it is found that epileptic children are much happier in an institute than outside—where they are apt to be looked upon askance by healthy children.

In England, the Lingfield Colony has a residential school for epileptic children in connection with its training colony for youths over sixteen and men under fifty. This school is doing excellent work and has earned the maximum Government grant, but its results are discounted by the fact that the children must leave after sixteen, and the return to their old surroundings often means that much of the training in the home and school is lost. In the Chalfont Epileptic Colony, children under fourteen (boys) or sixteen (girls) are not received. It is interesting to note that while music (except singing) is stated to be "too exciting" for the German epileptic, a "very good brass band" has proved a most successful item amongst the recreations of the Lingfield children.

An Open-air Reading Lesson.

In regard to the industrial training of mentally defective children (non-epileptics), Scandinavia has long occupied the foremost position. The institutes established for this purpose in Denmark, Norway, Sweden, and Finland are admittedly in advance of those existing in Germany (where

comparatively little has as yet been accomplished in this direction), especially in relation to the choice of the manual work and in the methods of instruction. Various trades, such as weaving, knitting, lace-making, sewing, wood-turning, brush- and basket-making, are taught with considerable success, according to the capacity of the individual pupils and the opportunities afforded by local markets, &c. The instruction is almost entirely in the hands of women, who possess the necessary qualities of firmness, patience, and forbearance in a special degree, and who have undergone a special training. As might be expected, such institutes are not self-supporting, though the more intelligent and capable pupils are able to turn out fairly remunerative work. The amount of intellectual instruction given is reduced to a minimum, but this minimum is thoroughly taught. It is most important that such children be kept under responsible supervision after the age of leaving school, for the mentally defective child has strong tendencies towards alcoholic and other excesses. Hence the importance of "continuation schools," and of the associations which have been founded for keeping a constant personal watch upon the daily progress and life of mentally defective persons engaged in earning their living. In the Frankfort-on-Maine district, for instance, about 80 per cent. of the children leave the mentally defective school sufficiently equipped and assisted to begin earning their living; yet, without this after care, the majority would sooner or later go to swell the class of beggars, loafers, and other undesirables—a class which in large towns is found to include no less than 30 to 40 per cent. of mentally defective persons.

But while an abundance of fresh air and sunshine is essential to the successful treatment of the two classes of abnormal children already mentioned, the "open-air school" *qua* school, has to do with the child whose educational incapacity is only relative, being really the expression of a temporary physical ill-health, mainly the outcome of poverty and overcrowding, especially in large towns. The first experiment in treating such weak and unhealthy school children by giving them instruction in the open air was begun at Charlottenburg in 1904, the site chosen being a suitable place in a large pine forest. Except in wet weather, the children are taught, fed, and take their midday sleep in the open air. During rain, a large shed, open to the south and closed on the three other sides, is made use of. In 1904 the stay of the children in the school was limited to three months; in 1905 it was increased to six months; and in 1906 it was continued up to December 22nd, eight months, the last two weeks being under snow. When the problem of satisfactory heating has been solved, the school will probably be kept open throughout the year. The longer the school has been open the greater has been the proportion of children improved and restored to health. The very satisfactory results thus attained have been due to the simplest means: constant sojourn in the open air whenever possible, the action of sunlight, baths, simple but sufficient and regular food, and a diminution in the hours of school instruction and in the number of pupils in each class. The educational results were no less remarkable, showing a general increase in the attention, mental alertness, and diligence of the pupils, with an equally notable improvement in their moral tone, cleanliness, and behaviour.

Other places in Germany speedily followed in the path thus indicated; and, encouraged by the results thus achieved, the London County Council last year sanctioned the establishment of an open-air school, conducted on similar lines, at a spot in Bostall Wood from July 22nd to October 19th. About a hundred children nominated by the head teachers of fifty-one schools in the immediate district, and passed by the medical officer as likely to benefit by the treatment, were taught there during these thirteen weeks under conditions such as have been described. The site was not an ideal one, being low, and therefore apt to be damp in wet weather; and in some cases not only was the journey to and from home tiring for the children, but their return each night to homes of an undesirable character exercised a special influence to their disadvantage. Despite these and other incidental drawbacks, however, the results more than justified the experiment. The improvement noted in the physical health, the intellectual capacity, and the moral tone of the children was, in almost every case, very distinctly marked. The expense for each child for the three months amounted to £7 10*s.* 2*d.* gross: towards this the Council contributed by a special vote £5 7*s.* 1*d.* per head; contributions from parents averaged 11*s.* 3*d.* per child; Government grant averaged £1 2*s.* 6*d.*; and the balance was made up by subscriptions collected by the Voluntary Committee.

The Council has arranged for the establishment of three similar schools during the present year, and the result of their working will be watched with hopeful interest. For the sake of both pupils and teachers in the elementary schools in the first place we may look for a much more general extension of the system eventually: for its results can only make for the national good. In truth, the open-air school is "a new type of school where sick children are to be taught and cured at the same time. If such children are kept in the ordinary school, they may be instructed, but their ailments will not be removed. If they are treated in convalescent homes only, their instruction suffers. The open-air school solves the difficulty." And in proportion as the value of education thus conducted comes to be recognised, so far as it affects the ailing and the weakly, may we not hope that more attention will be given to the real importance and the great economy of securing "all the fresh air and sunlight possible" during school hours for the healthy scholar also?

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THE TRAINING OF TEACHERS FOR SECONDARY SCHOOLS.

AT the end of the recently published correspondence on the proposed new Registration Council,[1] Sir Robert Morant, after reminding Dr. Gow that the ill-fated register of 1899 had entirely failed to commend training to candidates for posts in secondary schools, gave him the information (to which the official italics impart a certain piquancy) that the Board had determined to take "the most *thoroughly practical* steps for increasing the recognition of training for secondary-school staffs." These steps, he explains, are (1) the institution of direct Exchequer grants in aid of training schools, and (2) the adoption of a new condition of grants to secondary schools, requiring the appointment of trained teachers to a certain proportion of all future vacancies.

Through this connection with the unedifying history of registration the appearance of the Board's long expected "Regulations for the Training of Teachers for Secondary Schools"[2] acquires a significance greater than the considerable intrinsic importance of the regulations would give it. It implies that teachers, unlike most other intellectual craftsmen, have hitherto failed to form themselves into an autonomous professional body, determining its own standards of competence and regulating admission to its ranks, and that the Board, holding this failure to be prejudicial to the general interests of education, has determined to produce by external action the results that should have sprung from professional initiative—namely, the creation of a demand for training and the provision of means of satisfying it.

Accepting such a solution of the problem of training as the inevitable one in the circumstances, we limit ourselves here to welcoming the new regulations, which will at least relieve the existing training schools of intolerable anxiety, and cannot fail greatly to raise the level of professional competence in secondary schools.

A training institution may be recognised for the purpose of the new condition of grants to secondary schools quoted above if it confines its course to purely professional instruction, has not fewer than three students, and satisfies the Board's general requirements of efficiency. It can receive grants only if (1) it is not conducted for private profit, (2) applies no religious tests, and (3) has not fewer than ten "recognised students" in training. Under these conditions a grant of £100 will be paid in respect of every complete group of five recognised students up to a maximum of £600, provided that the sum thus granted is not more than one-half of the total amount from all sources paid to the staff for their services. In this way the Board gives practical effect to its strongly expressed conviction that the adequate payment of the staff engaged in the work is the fundamental condition of the effectiveness and prestige of training.

To be "recognised" a student must, before admission, have reached an academic standard which will, after 1911, be an approved university degree or its equivalent. If persons other than recognised students are admitted with these, the Board must be satisfied that this inclusion does not affect unfavourably the instruction and practice of the recognised students. These regulations, while tending to a desirably high standard of academic and professional competence in the ordinary secondary-school teacher, will exclude the great majority of kindergarten mistresses and their training colleges from the benefit of the grants, and thus will accentuate a grievance on which Sir Robert Morant himself laid much stress in the discussion on the constitution of the Registration Council. As the Treasury has declined to ear-mark more than £5,000 per annum for the aid of training institutions, this is a grievance which the Board will find it hard to relieve.

The regulations will not fetter the initiative of the individual institutions in respect of the details of their course, but they are in general so framed as to secure that it shall produce men and women really competent to assume the position of teacher in a secondary school. Thus the responsible head of the college or department and the majority of his staff must have had "successful experience" as members of a secondary-school teaching staff for a reasonable period; the course must extend over not less than a full academical year; the student must spend under proper supervision at least sixty days in contact with class-work, and at least two-thirds of this practice must be taken in approved secondary practising schools or in the secondary "demonstration school" which the Board may hereafter require the college to have at its disposal.

These salutary requirements will very easily be met by the training departments which have grown up in connection with a few secondary girls' schools; and the adoption of a minimum of ten grant-earning students, admittedly in the interests of these institutions, may lead to their multiplication and to their appearance in suitable boys' schools. This will be all to the good if the danger is avoided of sacrificing to the readily assessable "practical" fruits of training that such institutions would easily show, the less obvious but ultimately more important results of a broad and liberal course of pedagogical theory. Such a course, everywhere based upon and illuminative of the sound pedagogical practice which the regulations so wisely insist upon, is the best guarantee that the young teacher will make fruitful use of his experience, that his attitude towards his profession will be intelligent and enlightened, and that his mind will remain accessible to ideas.

So important are these liberal professional studies that it is to be hoped that, if it should prove difficult within an academical year to give sixty days to practice and in addition to cover the

[1] Scheme for a new Teachers' Registration Council proposed to the Board of Education by the Representatives of certain Educational Associations. (Wyman and Sons.) 1*d*.

[2] Wyman and Sons. 1*d*.

ground required for a university diploma in pedagogy, the difficulty will be met by accepting a hint from the regulations and lengthening the course. The most obvious objection to this solution is the economic one, which is generally held to have been really the fatal obstacle to training in the past. It could probably be avoided by a student-teacher scheme adopted in accordance with a well-considered plan of co-operation between schools and training colleges—a plan which has manifest advantages apart from its relevance to this particular aspect of the problem of training.

MISCELLANEA PEDAGOGICA.[1]

THE United States bids fair to rival Germany in the variety and number of its educational publications. The present parcel is an excellent miscellaneous sample of its pedagogic output. Drs. Snedden and Allen have surely struck a new vein in their study of school reports (1). A collection of blank statistical forms does not suggest exciting entertainment; nevertheless, out of this seemingly arid material the authors have contrived to produce a valuable and interesting book, which our English educational authorities would do well to present to their officials. Statistics are not valuable in proportion to the magnitude of the figures they deal with, though it is the size of the business which commonly appeals to those who are concerned in its administration. The authors have little difficulty in showing that current statistical returns answer few of those questions which really throw light upon the actual situation. One would be glad to know, for example, how many children leave school without passing through the normal series of standards proper to their age. Such information is not usually given in the annual returns. Yet it was the study of this question which led to the establishment of the world-famed system of schools of Mannheim.

Prof. Huey's contributions to the complex questions of psychology and physiology involved in the process of reading are well known (2). We could not have a better guide to the present position of research in this important pedagogic field. The first part of his book is an altogether admirable example of the modern effort to find scientific bases for teaching practice. A brief historical survey of the development of the art of reading and of teaching how to read constitutes the second part, which is followed by a careful consideration of modern school methods and school books. In his zeal for the scientific analysis of the reading process, the author has not forgotten that the teacher is chiefly concerned with enabling his children to do things. His book is a happy blend of the two points of view, and the teaching devices of well-known practitioners whom he quotes will surely stimulate all who are actively concerned with this important branch of education.

The position of the kindergarten in America furnishes another illustration of what that continent owes to European unrest (3). Driven forth by the political uncertainties of 1848, numbers of educated Germans settled in the States, taking with them the Fröbelian gospel. They started the movement, the story of which is told in Miss Vanderwalker's interesting volume. English teachers will probably find most to attract them in the chapter which deals with recent tendencies and coming changes. It is refreshing to read that American teachers are reconsidering their attitude towards "Culture Epochs" and "Theories of Concentration." Miss Vanderwalker also realises that the new psychology will ultimately compel a restatement of kindergarten theory. Fröbel is not final!

The art of school management from the headmaster's point of view is well worth the careful consideration which Dr. Perry has given to the subject in the book before us (4). He takes a broad civic view of the schoolmaster's position and responsibilities. There is, in consequence, a pleasing absence of professional pedantry from the book. It deals with all the problems arising in the practical control of a large primary school in an uncommonly human and suggestive way, thereby doing much to elevate the teacher's work above the deadening level of routine which is the great danger that besets it.

For secondary-school teachers Dr. de Garmo has completed the second volume of his "Principles of Secondary Education" (5). This is in the main a simple account of the logic of the teaching process, with illustrations taken from the curriculum of the secondary schools. Hence its title, as we do not suppose the author regards what he calls the "inductive and deductive approach" as the peculiar property of the high-school teacher.

Whether or not it is possible to introduce a modified form of special teacher in primary schools is obviously a moot point even in America, since Dr. Perry, in the book referred to above, after considering arguments on all sides, comes to an adverse conclusion, whereas Mr. Kilpatrick presents a strong case in its favour (6). He speaks with the authority that belongs to successful experience, and he describes how the various difficulties are overcome in his school. Teachers interested will find good practical advice on the question of how to introduce such a scheme of organisation into their schools. The idea of having a "geography" room, a "history" room, &c., in the primary schools has a good deal to commend it, at any rate from the point of view of externals.

J. A. G.

[1] (1) "School Reports and School Efficiency." By D. S. Snedden and W. H. Allen. xii+183 pp. (New York: The Macmillan Co.) 6s. 6d.

(2) "The Psychology and Pedagogy of Reading." By E. B. Huey, Professor of Psychology and Education in the Western University of Pennsylvania. xvi+469 pp. (New York: The Macmillan Co.) 6s.

(3) "The Kindergarten in American Education." By Nina C. Vanderwalker, Director of Kindergarten Training Department, Milwaukee State Normal School. xiv+274 pp. (New York: The Macmillan Co.) 5s.

(4) "The Management of a City School." By A. C. Perry, jun., Principal of Public School No. 85, Brooklyn, N.Y. viii+350 pp. (New York: The Macmillan Co.) 5s. net.

(5) "Principles of Secondary Education." By C. de Garmo, Professor of the Science and Art of Education, Cornell University. Vol. ii. xi+200 pp. (New York: The Macmillan Co.) 4s. 6d.

(6) "Departmental Teaching in Elementary Schools." By V. E. Kilpatrick. xii+130 pp. (New York: The Macmillan Co.) 2s. 6d.

LATIN TRANSLATION.[1]

WE may divide our remarks on this book into two parts. First, as to the selection of passages. These form a very interesting group, most of them being chosen to illustrate Roman history, from the Kings to the death of Caesar. The authors drawn on in the historical section are, of course, Livy, Cicero, Caesar, Virgil, and Horace, together with occasional pieces from Florus, Valerius Maximus, Justin, Frontinus, Nepos, Paterculus, Sallust, Suetonius, Gellius, Ovid, Lucan, Silius, and Juvenal. These are followed by a miscellaneous collection of all sorts of things; amongst the authors used are Plautus, Pacuvius, Terence, Lucretius, Catullus, Statius; Martial, Manilius, Tibullus, Petronius, and Seneca. The selection on the whole is original and intelligent; all the extracts are interesting, and they offer a greater coherence than is usual in such books. The pieces in the historic section are accompanied by necessary notes; besides which there are several appendices on conjunctions, prefixes and suffixes, cognate words, lives of authors, and chronology.

We now come to the other aspect of the work: its use as a practical aid to divining the sense of a Latin passage; and here we note first an odd thing. In the middle of the grammatical appendices, between cognate words and the lives of Roman authors, we see the title: "How to think in Latin." On turning to this attractive title, we find a Latin passage printed, followed by this advice: "You have seen how analysis helps you to arrive at the main thought of the sentence, and you are familiar with the principles that govern the order of words in Latin, and the important part played by the emphatic position of words, so you may now try to think in Latin: that is, to take the thought in the Latin order, without reference to analysis or the English order." After more in this strain, the author takes the piece phrase by phrase, and shows how the sense gradually discloses itself. And having hit on this excellent way of getting out the meaning of a Latin paragraph, he never thought of rewriting the introduction with its demonstrations! For in fact this is the only way to tackle Latin, or Greek, or French, or Chinese, or English, or any language under the sun: the reader must take it as it comes, each idea as it presented itself to the mind of the speaker or writer, and let the sense of the whole disclose itself as it was meant to do. But to treat a piece as a Chinese puzzle, to seek for the subject, and the verb, and this or that, is simply to spoil the whole thing. Now if Latin be properly taught, the first sentences presented to the learner will be simple enough to be taken in thus and yet not misunderstood; so that by the time the learner comes to his Livy, he will be prepared to deal similarly with his more complicated structure.

It seems to us, therefore, that much of the analysis in the demonstrations is wasted labour, because it ought not to be wanted at all. Analysis is useful after the sense has been obtained, to make sure that nothing has been omitted or mistaken; so in the same way often enough is translation. But we should draw a clear distinction between the understanding of the piece and the rendering of it into English. A good deal of the demonstrations is really recapitulation of grammar, and rather notes on the extracts than helps to make out the sense.

[1] "Helps to Latin Translation at Sight." By the Rev. E. Luce, with an Introductory Note by the Rev. the Hon. E. Lyttelton. xxiv+368 pp. (Eton College: Spottiswoode.) 6s. net.

GERMAN EDUCATION.[1]

THIS is at once an account of the upgrowth of German education and a history of German thought, the underlying principle being the dependence of educational development on the general progress of the inner life.

That development the author (whose death on August 15th we notice with deep regret) resolves into two main tendencies. The one is towards declericalisation—the freeing of education from the shackles of dogma and the transference of control from Church to State. Here we have the historical setting of the religious question, which Dr. Paulsen believed will one day issue in the demarcation of the dogmatic from the purely historical and literary aspect of religion, and the exclusion of the former from the schools. The other main tendency is towards democratisation—the constant expansion downwards of the school system. It is to be noted in this connection that the discovery and fostering of exceptional capacity and the "educational ladder" are ideas that have never found much favour in Germany. The aim there is to level up. Thus one of the achievements of recent years has been a marked improvement in the intellectual status of the primary-school teachers, and this, together with the spread of continuation schools, will probably lead, we are told, to the welding together of the two branches of the profession.

Involved in the tendencies just mentioned is that towards "real" or modern studies. The nineteenth century started with the ideal of an all-round culture—education *sub utraque*, as the phrase went. But circumstances were making in another direction. Sixty years later appeared the first semi-classical Real-gymnasium; then came the purely modern Real-schule; and these rapidly multiplying the battle of the books began in earnest. The upshot was the reform of 1900. The monopoly of the Gymnasium as the only access to the university was abolished, and the Real-gymnasium and Ober-realschule were "recognised." The principle then adopted was that in the training for certain professions—*e.g.*, medicine—the prior necessity of so many other subjects makes the insistence on Greek and Latin no longer practicable. Just how the modern scientific education is to be, so to speak,

[1] "German Education, Past and Present." From the German of Friedrich Paulsen. xxx+299 pp. (Fisher Unwin) 5s. net.

humanised, is one of the most interesting problems of the immediate future.

We must here just mention two capital facts that signalised the foregoing period—the institution, early in the century, of the *examen pro facultate docendi*, which raised secondary-school teaching to the rank of an independent profession, and that of the leaving certificate with its wholesome insistence on training.

We congratulate those concerned in its production on this excellent edition of an excellent book. It makes, as we have seen, a wide appeal, and the more so that Dr. Lorenz, the translator, has removed a stumbling-block from the student's path by providing an admirable key to the exuberant terminology of the subject. But the work is inspired by a fine enthusiasm which should make it especially helpful to those "who go about the godly business of the schoolmaster."

DOCTIS INDOCTISQUE.

SURELY few now except scholars read Giles and Phineas Fletcher. Yet since their works are accessible only in the famous Grosart reprints, the Cambridge University Press has published (310 pp.) their poetical works in two volumes. Vol. i., edited by Mr. F. S. Boas, contains the famous "Christ's Triumph" and the less known "Apollyonists" and "Sicelides"; a great feature is the learned editing and collation.

Old Evelyn is now included in the Globe Classics (Macmillan, 520 pp., 3*s.* 6*d.*) and is edited by Mr. Austin Dobson, surely the ideal editor for the man of peace. Pepys and Evelyn, so very different, so much alike, will always bear reprinting in a handsome and scholarly series like the Globe. T. E. Brown's Selected Poems (284 pp., 2*s.* 6*d.*), from the same publishers, appeal at present to a small but perhaps widening circle. Brown himself was sure of them (as few poets are), and let us hope his faith will be justified; the chance does not come to all to be put forward to the general reader in the "Golden Treasury."

The "Oxford Treasury of English Literature" has been twice noticed; the third volume, "Jacobean to Victorian," is now presented. Messrs. G. E. and W. H. Hadow are the editors. Once more, and in order to provoke criticism, we call attention to the misprint in Gray's "Elegy," "*Await* alike th' inevitable hour": the plural verb makes nonsense and is not found in old editions. The book costs 3*s.* 6*d.* and is published by the Clarendon Press. There are terse introductions.

The Pitt Press Series (Cambridge University Press) adds one more "Prologue and Knight's Tale" (edited by M. Bentinck Smith). The price (2*s.* 6*d.*) and the size (226 pp.) are similar to the time-honoured versions of Morris and Skeat, and we can hardly agree with the editor that there is room for this edition. The book is carefully but not ideally expurgated for schools. We doubt, and always have doubted, the glossarial explanation of "raughte."

Messrs. Longmans send a "Wonder Book" and a "Quentin Durward" in their bright orange-coloured shilling series. An extremely welcome trio are the "Lances of Lynwood," the "Little Duke," and the "Prince and the Page," classics dear to our youth; Messrs. Macmillan send them, in attractive binding, 1*s.* each. Prof. Lyde sends a "Child's Geography of England and Wales" (110 pp., Black, 2*s.* 6*d.*) with thirty-two admirable illustrations in colour. It is interesting and bright, but the ideal geography has not yet come. Mr. J. H. Fowler has edited for Messrs. Macmillan's series for secondary schools (now well known) the "Wonder Book" and Cavendish's "Life of Wolsey" (1*s.* each); the latter was certainly wanted. "Q." continues his delightful booklets for the Clarendon Press, 4*d.* and 2*d.* each. William Hazlitt, Matthew Arnold, Keats, and Isaak Walton are now added. Rolfe's "Henry VI.," part iii., comes out, as all Rolfe's Shakespeare does now, for the University Tutorial Series; all is excellent, but we miss the old binding. School editions of the "Tempest," "King Lear," the "Merchant," and "King John," costing a few pence each, are sent by Messrs. Pitman, Chambers, and MacDougall; and many good little readers, such as "Tom Thumb" and the "Snow Queen," are sent by Mr. E. Arnold (2*d.* each), who also furnishes the "Sesame Readers," four vols., from 7*d.* to 1*s.* 6*d.*, carefully graded, well printed, and thoroughly well illustrated. A reader of an original cast, "Chips from a Bookshelf" (1*s.*, 3*d.*), is sent by the same publisher.

SCIENTIFIC METHOD IN THE TEACHING OF GEOGRAPHY.[1]

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DURING the past ten years or so substantial advance has been made in the method of teaching science in schools. In former days the instruction consisted of lectures or lessons with occasional demonstrations by the teacher, but now it is acknowledged that no science teaching is satisfactory unless it is based largely upon personal practical knowledge gained by the pupils in the laboratory, workshop, or class-room. Whether the subject be chemistry, physics, mathematics, or nature-study, individual observation and experience are regarded as the only sure foundation upon which scientific education can be built.

New life has been breathed into science teaching in schools by the adoption of methods of instruction in which mental salvation is not attained by faith, but through works. Whether successful or no, the aim of the teacher should be to inspire and foster in the pupil the spirit of self-help and the desire for knowledge; to make him feel, though he may not express, the thought—"Give me understanding and I shall keep thy law; yea, I shall

[1] From a lecture delivered at University College, London, to members of the Geographical Association and others.

observe it with my whole heart." This is the frame of mind we desire to cultivate by the study of geography or of any other school subject concerned with man's relationship to nature.

Let us assume, then, that geography is to share in the revival of learning by truly educational methods, that the dry bones of dreary detail are to be brought together and used to construct a science instinct with human interest. When this is done geography will be brought into line with other subjects studied by scientific methods; and without this constructive intention there is no science.

It is necessary, therefore, to banish altogether the custom—now fortunately less common than it was—of regarding geography as a collection of facts with which pupils have to be afflicted in the course of their school careers, while they understand no more of the meaning of the material they absorb than they do of the microbe of measles from which they also suffer in their turn. The "useful-knowledge" fetish must not be a dominating influence in any subject of school study, and unless geography can be justified on educational grounds it should have no important place in the curriculum. What should be aimed at is not quantity of information—useful or useless—but interest and intellectual activity. If teachers are only talkers of geography, they are as sounding brass and tinkling cymbals, though they speak with the tongues of men and of angels, for the knowledge they impart is not attended with doing. No method of teaching a science is scientific unless it is accompanied by an active struggle on the part of the pupil to gain knowledge, not only of facts, but also of meanings and relationships, by inquiry and by imagination.

The object of scientific teaching should be, therefore, to make pupils learn by doing, and to lead them to discover the meaning or use of the knowledge gained by their own efforts. There are many sciences, but there is only one method by which they may be rightly studied, and any instruction in which this method is not followed is of little value from the scientific point of view. The method is to use facts as material for study, and not merely to make a catalogue of them. The facts themselves are not science any more than bricks are a building. What the teacher has to aim at is to impart appreciation of the method by which the building is erected, while the pupils take part in the work of construction. Materials have not only to be collected, but also classified and arranged with judgment and the help of the imagination before they form a structure to which the name science can appropriately be applied, and unless this work is illustrated by the teaching the method of instruction cannot be described as scientific. As Prof. Karl Pearson remarks in his admirable "Grammar of Science," "the scientific method consists in the careful and often laborious classification of facts, in the comparison of their relationship and sequences, and finally in the discovery by the aid of the disciplined imagination of a brief statement or formula, which in a few words resumes a wide range of facts."

Expressing these principles briefly, we may say that the scientific method consists in the collection and arrangement of facts with the view of discovering relationships and arriving at correct conclusions. If the deductions are sound they may be used to make predictions as to the consequences of bringing similar factors together in another field, and when these predictions are verified science attains its highest achievement. The application of this to geography may be difficult to understand at first sight, but really the statement only embodies the views of the best advocates of geographical education who have urged a scientific method of study without describing it as such.

The first essential for satisfactory study of science, or of any subject, is interest, and this may be stimulated by reading or by observation. The importance now attached to practical work in science has led to the neglect of reading, which is as necessary as laboratory instruction in every rightly arranged course. An inquiry of the leaders in any department of natural knowledge will show that in most cases they were first inspired to study nature by reading books which opened their eyes to the wonders around them. In most sciences readable books are rare, and the reason is that an attempt is made to provide too much information, forgetting that it is the letter which killeth while the spirit giveth life. Simple and inspiring books on the physical sciences, which children will read of their own accord, are difficult to prepare; in natural history the task is easier, but no scientific subject lends itself better to this method of approach than geography.

In the narratives of explorers and records of remarkable natural phenomena, the geographical teacher has a rich store of material from which suitable extracts can be made to interest young children. The extracts should be chosen for their beauty or simplicity of style, and because they illustrate such attributes as acute observation and perseverance under difficulties, which is the mainspring of all pursuit of scientific knowledge, rather than for the information they contain. At this stage there should be nothing systematic in the teaching, and no attempt should be made to take the child around the British Isles or around the world with the imaginary uncle or tutor of the hateful book of the "Sandford and Merton" type, where the pupil always asks a question in which no healthy child is interested and the preceptor oppresses with the ponderous platitudes of his replies.

Any explanations that are given should arise out of the inquiries prompted by the child's natural curiosity, and not be parasitic growths upon attractive literature. If it be possible to give practical or real illustrations which will assist children to comprehend any point upon which they desire information, so much the better, but let the inquiry come from the pupils and not from the teacher. It is not necessary for a child to understand, and be able to express, the exact meaning of every word he reads, and it is folly to insist upon his learning such meanings when he is gaining a general idea of them by his reading. How few of us would read books of travel, adventure or imagination, if we had to be confronted at every few pages with a tiresome sheaf of questions upon words, persons, or events described in them. We should not tolerate such a pedantic proceeding for ourselves, and yet teachers seem rarely to be happy unless they are pursuing this policy with children, the result being that what is intrinsically attractive is frequently transformed into an object of intense dislike.

This early reading of selections from stories of geographical discovery and phenomena will have fulfilled its purpose if it arouses interest and incidentally enlarges the pupil's vocabulary. Glimpses will have been obtained of the field in which knowledge has been gained, and the impression will have been received that what we know about the earth has been attained by investigation. There are, of course, many geographical facts which do not lend themselves to picturesque description; but what we want to banish altogether from the minds of children is that these facts grew of themselves instead of being the results of observation and experience. We want it to be under-

stood that the collection of facts is a valuable part of scientific study, even if the real significance of the material thus accumulated is not appreciated. If we succeed in creating the thought that the keynote of all science is inquiry, an excellent beginning will have been made.

How to apply this principle of observation and self-help to geography as it is applied to the experimental sciences is a difficult problem, for which only a few practicable solutions have been put forward. Many schemes have been published, and they have shown teachers, inspectors, and examiners that physical features are the determining influences in the character and distribution of peoples and industries, but none of them has stated exactly how, under the exigencies of actual school conditions, it is possible to put into practice the progressive opinions which the schemes express. Unless taught by scientific methods, geography based upon physical structure is too difficult for the juvenile mind to comprehend, and more unsatisfactory results are obtained than when pupils were only expected to remember details without inquiring into causes and consequences. The yoke of the geographical teacher and pupil has not yet been made lighter by the new views, but more has been put upon it, so that whereas they were once chastised with the whips of examiners, now they are chastised with scorpions in the form of inspectors, who demand the same tale of bricks but neglect to provide the straw. Under the old system teachers knew what to do, or rather what to make the pupils do, but they are now expected to construct their courses on scientific principles without being shown how this may be accomplished. The result is that though there has been a change in the point of view, the method of study remains the same in the great majority of cases. Truly can it be said of geographical teaching *plus ça change, plus c'est la même chose*.

The first point to be borne in mind is that most of the work must be done in the class-room; for any proposals which do not take this circumstance into consideration have little chance of being realised under the usual conditions of school teaching. Unless pupils are familiar with actual measurements of length with a foot-rule or tape measure, and their representation by lines drawn to scale, work of this kind should be done at an early stage of the course. After clear ideas of length or distance have been obtained, the compass needle may be introduced and exercises given in drawing, first, a line to represent magnetic north and south, and then lines in the direction of the six other chief points of the compass. Upon this practical knowledge of distance and direction, and their representation by lines, it is possible to base a number of exercises of the type, "An ice-bound ship drifts ten miles north, ten miles north-west, twenty miles east, fifteen miles north-east, and twenty miles west. Draw a diagram showing its course." Before commencing such an exercise, a small circle should be drawn in one corner of the page or paper upon which the diagram is to be made, and the directions of the eight chief points of the compass should be shown upon it. At a convenient time a true north and south line should be determined by observations of the shadow of an upright rod upon which the sun is shining. If the directions of shadows of equal length in the morning and afternoon of the same day are observed, the line bisecting them is true north and south; while observations on various days will show that the shortest shadow for any particular day lies on this line, and occurs at twelve o'clock or thereabouts.

As to what can be done in the way of measuring a class-room or playground, and representing them by a simple scale drawing, teachers must decide for themselves. It is, of course, desirable for pupils to make as many measurements as possible, but with large classes it is impracticable for every individual to be measuring the size of a class-room or other part of the school buildings at the same time. If a few pupils make the measurements, and all the pupils use the results to construct a plan on a simple scale, this is as much as can be expected in most cases.

The transition is easy from a scale drawing or plan to a simple map of the district in which the school is situated. In every district simplified maps are available, and children have little difficulty in understanding them. With such maps exercises can be set to determine the distances between selected places, and the "bearing" of one point with reference to another, the intention throughout all this work being to make the pupils do things for themselves instead of presenting to the teacher that appearance of feigned interest or passive content which to the practised hand means that their thoughts are far away. It is astonishing how quietly a class will listen on a sleepy afternoon, when the soothing influence of the teacher's voice causes the mind to doze; but if work is to be accomplished the teacher must talk less and make the pupils do more, for geography cannot be learned by listening any more than can arithmetic.

When a simple map is understood, there is no reason why work should not be done on a map of the British Isles, either physical, political, or showing roads and other ways of communication. The maps which with many others are now to be found in a number of cheap atlases must, however, be used as material for study, and not merely for description by the teacher. Upon each map a suitable set of exercises to be done by the pupil should be based. The maps may thus be used to obtain answers to such questions as: What is the length of Great Britain? What is the greatest width of the British Isles? Name the seas surrounding the coasts. Where does the highest land occur? Where are most of the small islands? What coasts are most broken up by bays and arms of the sea? Find where the rivers Severn and Thames rise, and into what seas they discharge. Hundreds of similar and more instructive exercises can be drawn up, and they are not only of value as mental discipline, but also because the pupils who have to examine maps carefully in order to answer questions are at the same time acquiring much useful knowledge. The rule must be not to tell pupils anything which they can find by examination of the material provided in the form of maps (which are merely conventional means of representing geographical facts) or by the study of the facts themselves.

A practical knowledge of distance and direction, combined with the common experience that land is not all on one level, enables pupils to work intelligently upon maps of the kind usually found in atlases. If, however, we confine ourselves for the present to the British Islands, we must deal with climate soon after the natural physical divisions have been studied upon the maps. This involves a knowledge of the meaning and measurement of such meteorological factors as temperature, pressure, rainfall, wind, and sunshine. Now it should be regarded as an educational axiom that no numbers or other symbols should be used until their meanings are understood. It is undesirable to give a list of temperatures of various places, or to use for exercises a map upon which isotherms are shown, unless the numbers convey definite ideas to the pupils. It is not necessary for every or any pupil actually to make a thermometer, but it is essential that each one should

see the instrument and know the temperature scale upon it in order to learn anything from statistics or maps relating to climate. In the same way no list or maps of results of observations of pressure and rainfall should be studied until an acquaintance has been made with a barometer and a rain gauge.

Meteorological observations should therefore be made at the school more to create intelligent interest in the nature of the records than to determine the climatic characteristics of the place. With this preliminary knowledge a truly scientific method of inquiry can be followed. Results of observations made at various parts of the British Islands and at different times of year provide the material for study. A table recording the average mean temperature for each month of the year at, say, Greenwich, is given, and from it the pupil constructs a curve showing the continuous change throughout the year. Similar data are provided for other places in order to lead pupils to see for themselves that the range is less on the coast and in the west of our islands than it is inland and in the east. The influences of altitude can be deduced by the pupil from an examination of records of mean monthly temperatures at two neighbouring places like Fort William and Ben Nevis, and the influences of latitude can be seen by examining a table showing the average annual temperatures of a few places from the Scilly Islands in the south, where it is 53°, to Shetland in the north, where it is 45°. All this is, of course, very slow work, but its educational value is immensely greater than that of lessons which merely involve the exercise of the memory.

Isotherm maps for January and July can be constructed from lists showing places with the same mean temperatures for these months, but provided the meaning of isotherms is understood, there is no reason why the maps given in atlases and text-books should not represent the material to be studied; and exercises may be set to bring out the main facts shown on the maps. The seasonal distribution of rainfall, variation with altitude and with distance from the west coast, and the river-flow, can be easily discovered by pupils if suitable records of observation are tabulated and used as material for exercises. Similar instructive work can be based upon records of the frequency of winds from various directions, or of the mean monthly barometric readings at neighbouring places with different altitudes. In all cases the pupils should be encouraged to arrive at a principle or generalisation from the material put before them, whether in the form of results of observation or of maps. Even if the principle be not perceived without assistance, the effort to discover it is good mental exercise. What should be clearly understood is that every fact upon a map represents the result of observation, and that every geographical generalisation has been obtained by the study of facts recorded by various explorers and observers.

The method illustrated by the foregoing examples can be extended to the whole world at any convenient stage of the course. When pupils have clear mental views of distance and direction, they are as ready for the study of a terrestrial globe as of the British Islands. They have to accept the map as a true representation of our islands, based upon observations, and it is more difficult to realise this than it is to believe that a terrestrial globe represents the earth on a small scale. In neither case can any easy proof be given that the map and the globe are faithful miniatures of the forms and features of the land and water of the earth. With even a small globe, many interesting exercises can be set involving observations of the relative sizes and forms of the various land masses, use of the equator and meridians to define locality, positions of countries with reference to the equator, distances between places, courses of ocean ships, use of the Suez Canal, value of the Panama Canal when constructed, voyages around the world, and so on. Work of this kind is most interesting and instructive, for children have lively imaginations, and a terrestrial globe may be made to them a real world on which they pass from one point to another like early explorers.

There are substantial reasons for believing that pupils should be made familiar with the terrestrial globe by means of numerous exercises, involving a careful study of the facts represented upon it, before dealing with maps of the world or of the various continents. Until the mind has a view of the earth as a ball, on which the general forms and positions of the continents are depicted, no useful work can be done with results of observation from various parts of the world or with maps on which these are represented.

The effect of long-continued rains in raising the level of a river can only be observed at suitable opportunities and places; but, as has been remarked already, exercises can be based upon records of rainfall and river-flow in any district, and if the facts thus provided are represented graphically the relation is seen at once. Pupils ought not to be merely told that "where both warmth and moisture are found vegetation is likely to be abundant and varied." They should be provided with particulars as to vegetation, temperature, and moisture, with the object of leading them to perceive that there is a relation between these factors of climate and the distribution of plant growth. That rainfall is confined to certain seasons in many parts of the world, while in other parts, as in our own country, it is distributed throughout the year, can be found by examining results obtained by observation in suitably selected regions. A teacher ought not to be content to state to his pupils a fact of this kind, which they can easily verify if they are provided with the material upon which the conclusion is based. Similarly, the pupils should not wait for the teacher to point out the relationship between the summer rains, crops, and density of population of the south and east of Asia, to give another instance. What should be done is to provide particulars in the form of maps or otherwise, showing the distribution of population, crops, and seasonal rainfall, and let the pupils discover the connection between the three sets of facts.

When pupils understand an orographical map, they can be given plenty of exercises upon it to show the influence of physical features upon lines of communication. There should be no need for the teacher to direct attention to the easiest lines of communication between Leeds and Manchester, or by constant repetition to be sure that such results are "thoroughly instilled into the minds of boys and girls," if common sense be brought to bear upon individual work with orographical maps. Absurd routes are usually those described by pupils who have obtained from a teacher or book whatever information they possess about lines of communication, instead of acquiring it by their own study of maps.

Again, pupils ought not to be told that "mountains have a great effect in causing water-vapour borne by winds to take the form of clouds and rain," but to be provided with records of rainfall obtained at stations on both sides of a range; for with such facts before them

they will soon see the effect of mountains upon moisture-bearing winds. What is known of this effect has been obtained by the study of observations made at suitably situated stations, and this is what we want to impress upon the minds of pupils rather than the passive acceptance of statements for which no justification is supplied. Conclusions based upon personal study of evidence are far more valuable and permanent than those obtained from other people; they are reasonable convictions instead of being dogmatic articles of belief.

In all these matters, therefore, the scientific method demands that the facts upon which conclusions are based should be presented to the pupils and, so far as possible, left to tell their own tale. The ultimate causes of many of the facts are often too difficult for young pupils to understand, but principles can be discussed without knowing exactly their "why" and "wherefore." This is particularly true of astronomical geography. Why the length of day should vary in different latitudes and seasons; why some parts of the earth receive much more heat from the sun than others; why the positions of the heat zones should be different in summer and winter; why the temperature decreases as we ascend into high altitudes; why there should be two tides in a day; and many other similar questions are not really essential subjects of geographical study, though they may form part of the instruction at an appropriate stage. We can study the geographical effects of the proximity of iron ore and coal without knowing exactly how the two mineral beds were produced, and we can trace the trend of summer and winter isotherms, or discover that there are well-marked rainy seasons in some regions, without knowing that the prime cause of the differences observed is the obliquity of the ecliptic. If stress be laid on fact, and principle be built upon evidence, the exact explanation of the means by which the conditions studied are brought about can be left to take care of itself.

Let it not be thought for a moment that the neglect of the human side of geography is suggested. History may be studied by scientific methods as much as geography, and all that is here advocated is that, whenever possible, pupils should be brought face to face with evidence and trained to study it. The best way to obtain evidence is by direct observation, but as it is not practicable for a single investigator to compass the world by personal inquiry, the results of observations made by others may be used as material to be sorted, grouped, compared, and generalised, provided that its nature is clearly understood. Combined with this collection and consideration of facts there should be a course of reading or descriptive lessons intended to inspire interest in the earth and its inhabitants by word and picture, and to cultivate appreciation of what may be termed the intangible influences and factors of geographical character.

It is evident that much more time is required to obtain information by inquiry than by the usual method of providing particulars to be absorbed by the pupils, but not digested. This has, however, been recognised in other sciences, and it must be accepted in the study of geography if reasonable methods are to be followed in the instruction. It must be realised that the main purpose of education is the promotion of mental efficiency, and that the acquisition of knowledge should be an incidental or subordinate result of the work. When this principle is used as the criterion of satisfactory instruction, geography will have secured a place among other subjects studied by scientific methods.

SCHOOL LIBRARIES IN CAPE COLONY.

DR. T. MUIR, superintendent-general of education in Cape Colony, has favoured us with an extract from the official *Education Gazette* of June 18th giving an account of the progress made in the provision of libraries in the schools under his direction. The subjoined abridgment of this record shows what has been done in Cape Colony toward the establishment of libraries in connection with public and private schools there.

When the superintendent-general took up the question of library provision in 1892, there were only twenty-two schools with libraries, and in his report for 1893 we find a passage which tells us of the first steps taken to improve the position and of the grounds on which such action was taken:

"Scarcely anything more valuable can be acquired at school than a taste for reading, and unfortunately the tendency to make all school work subservient to examination prevents in some degree the fostering of the taste. It is not too much to say that the unformulated definition of a book in many children's minds is *a something used in school for the purpose of preparing for an examination.* The manifest duty, therefore, of everyone interested in real education is to do all that in him lies to counteract this evil tendency; and nothing is more likely to do so, especially in this country, than the establishment and proper use of good school libraries. In this belief I caused a pamphlet on school libraries, with a long list of carefully selected books, to be distributed during the year among a considerable number of public schools. The interest excited by this, I am glad to say, resulted in the formation of about thirty new libraries. . . ."

The Department assisted schools in the purchase of the necessary books and bookcases by giving aid on the £ for £ principle, the local funds usually being raised by means of school entertainments, &c. Taking advantage of this system, many teachers showed a real interest in their scholars' welfare by getting the necessary funds together for the purchase of a library.

The progress made from year to year in the number of school libraries is shown in the following table:

Year	No. of Libraries	Year	No. of Libraries	Year	No. of Libraries
1892	22	1898	157	1903	330
1893	50	1899	205	1904	446
1894	62	1900	236	1905	496
1895	73	1901	234	1906	563
1896	91	1902	247	1907	733
1897	123			May, 1908	**1548**

In his report for 1896 the superintendent-general said that "The lowest ideal to be aimed at must be, 'No school without a suitable library,' and teachers and inspectors are counselled to keep such an ideal steadily in view." At that date the schools thought of were the *public* schools, and if this had continued to be the ideal it would now have been practically attained, the number of undistributed book-packages being almost exactly the same as the number of such schools as yet unsupplied. The ideal, however, has altered for the better, and the *private farm* schools, fluctuating and short-lived as many of them are, are not to be neglected. Many of them, indeed, have already profited by what has been done, and it is confidently hoped that some means will be found before long of supplying them all.

When, however, the cupboard with its books is actually there, it is the teacher who can do most real good. He alone can help the pupils in their choice of reading, can

discover latent tastes, can develop interest when the germ appears, and, what is equally important, can keep a watchful eye on the reader who is bored. In the end, too, it is the teacher who can make the library grow by interesting parents and members of management committees; and growth, it must be borne in mind, is an absolute necessity, the gift collection of books being a mere nucleus round which an effective school library is expected to gather.

HIGHER EDUCATION OF GIRLS IN PRUSSIA.[1]

ON August 19th the Prussian Ministry of Education promulgated the new regulations for the higher education of girls, which have now been sanctioned by the Emperor William. The effect of these regulations is to place the higher girls' schools in Prussia upon an equal footing with the corresponding class of boys' schools under the direct control of the Government provincial school boards or supervising committees. The teachers at girls' schools will in future be required to possess qualifications similar and equal to those which are demanded of the teaching staff at boys' schools. The course at the higher girls' schools is to last ten years instead of nine, and education will begin at the age of six. The scope of the curriculum will develop upon existing lines, but nine and twelve years respectively have been fixed as the *minimum* ages at which instruction in French and English is to begin.

The higher schools will be divided into ten classes, and, with certain exceptions, pupils will be expected to qualify for removal into a higher form during each of the ten years of the school course. Up to and including twelve years of age all pupils will go through the same general course, but upon reaching the third form from the top at the age of thirteen, those girls who may desire to qualify for a university career will begin to be taught Latin, and, after passing through two special forms, these pupils will be divided according to their own tastes into a modern or professional side and a classical side. Each year the pupils will be removed into a higher division until, at the *minimum* age of nineteen years, they will be admitted to the matriculation examination at a university. Women students will be allowed to matriculate at Prussian universities at the beginning of the coming winter term.

Those pupils, on the other hand, who do not aspire to qualify for a university career will continue the ordinary school routine until they reach the tenth or highest form at the *minimum* age of fifteen. Upon passing their leaving examination, the girls, if they desire to complete their education, will then once more be divided according to their tastes or future vocations in life. Those who desire to become school teachers and governesses will be specially trained for another four years, the last of which will be devoted to practical instruction until the *minimum* age of twenty for the final certificate examination is reached. For those girls, on the other hand, who have no special career in view, a special two years' "finishing" course will be instituted, during which the pupils will not only receive advanced tuition in music, languages, and similar subjects, but will also be trained in the practical duties of the household and of everyday life.

The pupils of the higher girls' schools, therefore, will, as they progress, be drafted into girls' finishing schools, school teachers' seminaries, or university seminaries. These courses are to be optional, and each school will, as far as possible, provide its own finishing and training classes.

In the preamble to the new regulations it is explained that the authorities have desired, not only to encourage a girl, upon leaving school, to fit herself for the ordinary duties of the life of a German lady, but also to provide opportunities for study and professional training to those girls who have no inclination to enter the teaching profession, which has hitherto been the chief opening for women. It is set forth that the rapid development of modern civilisation, the excess of the female over the male population, and the growing disinclination on the part of men in the upper classes to marry are year by year compelling an increasing percentage of girls in the higher and middle classes to renounce all hope of fulfilling their natural vocation as wives and mothers. These categories of young women are, therefore, to receive opportunities for preparing themselves for a professional career. The so-called "lyceum," which will in future be attached to girls' schools for finishing and training purposes, meets a long-felt want, in so far as it proposes to systematise and round off the final stages of a young girl's education; but educational experts have already considered it necessary urgently to warn parents against allowing their daughters to take up advanced subjects or classical studies unless they show a genuine aptitude for a university career.

[1] From the *Times* of August 20th.

HISTORY AND CURRENT EVENTS.

LAST year a company of school teachers went away for their summer holiday after a harassing term's work. They were so "sick" of these troubles that all mention of school was forbidden under penalty of a small fine. This year they have gone through the same experience, only that their troubles have increased. They were so much more determined during their vacation to ignore their school life that the amount of the fine was increased, and the charity for which these funds were destined has profited in consequence. On a small scale this illustrates the "tyrannies" and "despotisms" of history. When, after the English Revolution of 1688, British merchant trade advanced steadily, crimes against property became increasingly troublesome, and during the eighteenth century the penalty of death was attached to so many offences that you might as well "steal a sheep as a lamb." It is weak Governments that are merciless. They cannot afford to be merciful.

"THE island of Sandray, which lies south of Vatersay, has been seized by raiders, consisting of five families from the neighbouring island of Mingulay. The raiders of Vatersay are said to be enraged at this invasion of Sandray, as they themselves had designs upon that island." So we read in the papers. These islands are not in the Pacific or other "uncivilised" parts of the globe. They form part of the Hebrides, a group which is included under the general designation of the British Isles. The paper from which we quote speaks of the jealousy of the Vatersay folk as humorous. It would not have been so fifteen hundred years ago, at the period of the "wandering of the nations." Then the Hebrides were raided by the Vikings, and their expeditions and jealousies were by no means humorous. Are the raiders from Mingulay descendants from those old warriors, and, if so, is there here an instance of "reversion to type" or only of continuity of nature?

LAST July the members of the House of Commons at Westminster were discussing a Bill to fix the hours of coalminers at eight a day. Many views were expressed, and the subject was debated from many sides. The House was told on one hand that the Bill must pass or there would be a strike, and on the other that some miners who

now worked less than eight hours a day would strike if it was passed. Thus, as ever, force of some kind is the driving power of governments. The economic results were discussed, and especially the effect of the Bill, if passed, on the cost of coal to the consumer. Some thought it would be small. Others thought that, whatever it was, the consumer ought cheerfully to suffer for the sake of the miners. So class interests were set one against the other. Finally, one member, to show his ignorance of the laws of economics which he wished to ignore, said that the extra cost of production *should be* met out of the profits of the trade, and that the consumer *ought not to be made* to pay. We shall have Acts of Parliament to regulate the weather next.

PAGEANTS have flourished again this summer, and our people ought to be learning something of history, at least on its picturesque side. But, besides these, we have noted a small commemoration at Cranham, in Essex. Cranham was the home of General Oglethorpe, who in the reign of George II. took out a number of insolvent debtors to America and settled them as an outpost of Great Britain over against the Spanish colony of Florida. The name he gave his colony was derived from that of his Sovereign. How many names in America are derived from Europe? We are thinking, not of the many towns simply named after towns and villages of Europe, such as Boston or Cambridge, but of those derived from names of people, such as Georgia, or Pennsylvania, or Maryland. Van Diemen's Land and Tasmania are similar instances in Australasia. Here is the subject of a topical lesson in history and geography combined.

ITEMS OF INTEREST.

GENERAL.

THE annual exhibition at South Kensington of drawings, paintings, and specimens of the artistic crafts for which awards have been made in the National Competition gained additional interest this year from the proximity of the International Art Congress Exhibition, which was held in the adjoining galleries of the museum. At the same time and in the same building was also shown a selection of works from schools of art, forming a retrospective exhibition of works which have received awards during the past ten years; whilst in the southern galleries of the museum was a representative selection of the works done by the students of the Royal College of Art during the past year. The coincidence of these otherwise independent exhibitions gave a unique opportunity for the study of the results of British State-aided art teaching in all its grades and ramifications, an opportunity which was evidently appreciated to the utmost by large numbers of provincial and foreign teachers and art workers who attended the meetings of the congress. The report of the examiners on the present year's competition, illustrated by reproductions of many of the premiated works, forms a very interesting document; it may be purchased (3*s*.), together with a complete list of the 1,728 students whose works have been rewarded or commended. The general standard of excellence was well maintained in both the National Competition and Royal College of Art work, whilst in some departments, notably those of figure composition and decorative painting, the degree of success was far in advance of that of former years.

THE twentieth annual meeting of the Society of Art Masters was held at the Victoria and Albert Museum on July 31st and August 1st. The report of the council, which was adopted, states that during last year the membership of the society has increased from 283 to 310. A sub-committee of the council has been appointed to consider the relations between local authorities and schools of art. After a deputation from the council of the society in March last, and a subsequent letter with respect to the position of drawing in the Army entrance examinations, the War Office has assured the society that the question will receive most careful consideration. A resolution was adopted unanimously stating that the society, composed as it is of holders of the Government diploma of art master and Associate of the Royal College of Art, protests against the action of certain associations of teachers in propounding a partial and non-representative scheme for a new Teachers' Registration Council. The following reasons were advanced: (1) That the Education Act (Administrative Provisions), 1907, allows the constitution of a "Registration Council representative of the teaching profession," presumably as a whole; but at the conference held at the College of Preceptors on February 29th last, the representatives of secondary education were as two to one, and, by the confession of the chairman, an important body of educationists was not even considered. (2) That as the ultimate end of the Order in Council is the formation of a homogeneous and self-governing teaching profession, any attempt to cut off any body of teachers, whether their teaching be of university rank or of the most elementary character, is a retrograde step impossible for the true educationist, and calculated, if successful, to bring grievous harm to national education.

THERE are but few changes this year in the Regulations of the Board of Education for Technical Schools, Schools of Art, and other Forms of Further Education in England and Wales now published (Cd. 4187). One change is to be welcomed, and that is the section which requires the appointment of a headmaster in those institutions where hitherto the various teachers have been responsible only to the committee of management, and the different subjects of science have been regarded as completely separate one from the other. As the prefatory memorandum points out, to ensure satisfactory results in the direction of assisting local industries it is important that the students should follow a suitable course of study extending over successive sessions, and that a teacher of wide knowledge and experience should be available to give counsel and guidance to the inquiring student anxious to fit himself for the industry in which he is engaged. Other important duties of the headmasters of such institutions are an investigation of the educational needs of the neighbourhood, consultation with parents, and the provision of facilities for continuing their general education in the case of unqualified students.

THE report of the Joint Scholarships Board on the examination for minor county scholarships in Essex testifies to the great progress made in that county. No fewer than 1,402 candidates presented themselves for the twenty scholarships which were offered. Of these candidates, 711 passed the preliminary examination and 543 attained scholarship standard. The examiner reports that Essex is easily first among the counties submitting to the test of the Joint Scholarships Board's examination.

DR. FREDERICK ROSE, of the London County Council's medical staff, says that of children of school age in towns 3 to 5 per cent. ought not to be within the four walls of a class-room. This means that nearly 40,000 London children should be taught in open-air schools. Dr. Rose has designed an open-air school for one hundred children, and a model has been constructed having an area of about six hundred square feet, which is on view at the Whitechapel Art Gallery.

Dr. Butler's address to the summer meeting of extension students at Cambridge has been published by Messrs. Bowes (6*d.*). To the Master of Trinity we look for eloquence, wit, and inspiration—and we do not look in vain. In this address he dwells on the "thirst for knowledge" to which he attributes the birth of universities, schools, churches, and in recent times of university extension. One word of caution he gave—"Cambridge does not love the superficial." Dr. Butler's hearers had a courtly and inspiring welcome.

The Department of Agriculture and Technical Instruction for Ireland has issued a circular letter dealing with a question of considerable importance to teachers, especially science teachers. In a recent action at law, damages were recovered from a teacher on account of injuries received by one of his pupils in consequence of a dangerous substance, used for scientific experiments, having carelessly been left in the way of the school pupils. The Department wishes all teachers to be made aware of their responsibility. Moreover, it appears possible that in such cases responsibility might be brought home to technical instruction committees or school managers.

We have received from the English Association the fourth number of the society's Bulletin, which contains reports of local meetings in England and Scotland, and a short bibliography of recent books connected with English. Seven leaflets have now been issued by the association, and the three latest deal with the teaching of literature and composition in secondary schools. They bear the stamp of practical experience, and show an intimate knowledge of school conditions and of boys and girls; the age of the pupils and the amount of time available for the lessons are not overlooked. Further information may be obtained from Miss Elizabeth Lee, 8, Mornington Avenue Mansions, West Kensington, London.

The latest issue of *Saint George* contains several articles of interest to those who are concerned with the relation of education to social questions. We would direct particular attention to "The University and the Working Folk," being the founders' oration delivered by Mr. Lewis Paton at University College, London. Mr. Paton makes a very eloquent appeal for a close association between the university and the people, and gives forcible illustrations showing how at the present the training which the university gives her sons is crippled in its efficiency by the caste conditions imposed on her by society. This article is followed by one from the pen of Mr. Bompas Smith, who shows that 90 per cent. of open scholarships at Oxford and Cambridge are taken by boys from schools represented on the Headmasters' Conference. In other words, a boy's chance of winning a scholarship is slight unless he can attend one of a comparatively small number of schools.

The committee of the British Education Section of the Franco-British Exhibition has issued "A Short History of National Education in Great Britain and Ireland" at the modest price of threepence. The author of the pamphlet is Mr. T. L. Humberstone, who has been successful in giving a broad-minded sketch which clearly outlines the story of England's awakening to the responsibility of educating her children. A surprising amount of information has been compressed into thirty-two pages, and yet the "readable" character essential to the purpose of the work has been preserved. The photographic illustrations are well executed, and the reproductions of the maps and statistics which cover the south wall of the exhibition hall are of themselves worth the small sum asked for the entire production.

The report of the Departmental Committee appointed by the Board of Agriculture to inquire into agricultural education in England and Wales has been published as a Blue-book (Cd. 4206). Under the chairmanship of Lord Reay, the committee has conducted a prolonged and exhaustive inquiry, examining 113 witnesses, and receiving evidence from Government experts connected with such work in England, Ireland, India, Australia, and New Zealand. All the universities, university colleges, and leading institutions of the country supplied information, and the existing facilities are passed under searching review. The principal conclusions and recommendations are summarised under thirty-two headings, and the committee expresses confidence that, if its recommendations are adopted, it will be possible to build up in England and Wales, at no excessive cost and within a reasonable time, a system of scientific and practical agricultural education equal, if not superior, to that now existing in any other country. For the purpose of illustration merely, we select the following points in the recommendations.

The number of institutions providing higher instruction is probably sufficient, but they are not yet fully developed. Future expenditure should provide for better equipment of existing institutions, attention being first given to securing a highly qualified staff. The need for a greater supply of well-qualified teachers demands serious consideration by the Board of Agriculture. The practical results already obtained are satisfactory in view of the limited expenditure; the attitude of farmers has undergone a marked change, and a number of improvements in farm practice can be traced directly to the influence of the institutions. The facilities for agricultural education of a lower grade are unorganised, unsystematic, and wholly inadequate. The committee recommends winter agricultural schools, with instructors drawn from farm institutes.

A lectureship in tropical agriculture should be established at one or more British universities. Travelling fellowships for teachers should be provided, and research encouraged. The Board of Agriculture should collate the results of experiments conducted throughout the country, and publish those directly bearing on the improvement of agricultural practice. Courses of instruction should be provided in subjects bearing upon agriculture and horticulture for teachers in elementary and secondary schools.

At the annual meeting of the Northern Union of Domestic Economy Associations a paper was read by Prof. A. Smithells on the educational aspects of domestic subjects. He congratulated his hearers on the progress made during the last two years, and referred to the laudable attempts being made to bring domestic subjects within the purview of the universities. Such subjects are not only useful in the narrow sense, but also truly and broadly educational. There exists a realm of knowledge, intermediate between the abstractions of formal school science and the rules and recipes of the household, to which the term domestic science may quite justly be applied. Teachers of domestic subjects offer to the rising generation of women instruction in the arts which are peculiarly their own to practise or supervise. Their work "ought not to stand apart from the rest of women's education as something accessory or subordinate; it is an essential and a most worthy part of a proper curriculum."

The report of the superintendent-general of the Cape of Good Hope Department of Public Education for the year ending September 30th, 1907, has reached us. It is, on the whole, a story of progress. Dr. Muir, the superintendent, summarises his report, and directs attention to the follow-

ing main facts. The local administration of public schools has passed practically into the hands of the school boards; out of a total of 2,104 schools, only 268 remained on December 31st outside their control. In the supply of schools for European children and in the enrolment of pupils in these schools, there have taken place the unprecedentedly large increases of 454 and 6,482 respectively. The average attendance of European pupils is excellent, exceeding 90 per cent.; the average attendance of coloured children has improved, and now stands at more than 83 per cent. The average level of attainments among European pupils is still far from what it ought to be, but the popular standard of education is rising rapidly. The quality of the instruction given in public schools is improving steadily. The new subjects of nature-study and elementary agriculture are being added, where possible, to the public-school curriculum. As regards the qualification of teachers, the position this year shows an improvement on last year's, the percentage of certificated teachers having risen from 50 to 53 per cent. of the total number employed. With regard to higher education, there is no noteworthy development to record; there has been an increase in the number of students attending the five university colleges; notwithstanding this increase, however, the cost to Government per student still reaches a high figure.

IN 1905 an agreement was entered into between the Board of Education and the Prussian Kultus Ministerium for the interchange of secondary-school teachers. This agreement applied to men only. It has now been supplemented by a further agreement, which enables women to avail themselves of the scheme. The Board of Education is now prepared to receive applications both from men and women who either are, or are qualified to become, secondary-school teachers, and desire to obtain employment for at least a year in Prussia as assistants in secondary schools. Similarly, the Board will receive annually from the Prussian Kultus Ministerium lists of candidates recommended for appointment to secondary schools in England. Full particulars and forms of application may be obtained from the Director of Special Inquiries and Reports, the Board of Education, Whitehall, S.W.

A CONSTANT reviewer asks this question, "Is there any defence at all for the reading 'await' in the 'Elegy'?"

> "All that beauty, all that wealth e'er gave
> Awaits alike th' inevitable hour."

He has challenged, he writes, editor after editor of anthologies. Even the "Golden Treasury" makes the mistake. A reference to any old edition gives the singular verb; besides, the plural makes nonsense. "The inevitable hour awaits all" is what Gray meant to say—and did say; but the editors decline to follow him. Who would say that "the boast of heraldry and the pomp of power await death"? They *await* nothing: something *awaits* them.

AN admirable catalogue of the Juvenile Department of the library at Bootle is before us. It is not priced, but we suppose it can be got by application to Mr. C. H. Hunt, librarian. Very good rules for the children are printed on the inside of the cover, and the volume (it has 109 pages) is evidently the work of people who mean to make children use the books. The number of books on pets is (if we can believe the heading) meagre, and Mrs. Nesbit has one book only against her name: but all the favourites are here. Our plea for many well-illustrated, large, expensive books has again to be made: we could write out a list of twenty fascinating volumes. We do not quite see why the catalogue is in two parts.

THE council of the Froebel Society has addressed a letter to the Board of Education in answer to the recent appeal of the Board for expressions "of the views of the teaching profession," again urging the direct representation of the Froebel Society upon the new Registration Council, on the ground that the society represents the interests of a large number of women teachers who are not represented by other bodies, and are not teachers for special subjects, but are trained general teachers of young children.

THE registrar of the Joint Agency for Women Teachers informs us of a reduction in the charges to be made to members of the associations represented on the committee of the agency. For engagements for 1909 and afterwards, members of the associations represented on the committee will no longer be charged any registry fees, and the commissions to be paid will be, for resident posts, 1½ per cent., and for non-resident posts 1 per cent., on the first year's salary.

THE library of the Board of Education was closed on August 15th for the purpose of removal to the new building in Charles Street, Whitehall. Advantage is being taken of this opportunity to reclassify the books on a new and more scientific principle; the library will not reopen until October 15th.

MR. E. B. LUDLAM, science master at Ackworth School, Pontefract, has been appointed to succeed the late Mr. W. A. Shenstone, F.R.S., as science master in charge of the chemistry department at Clifton College.

SCOTTISH.

GRAVE dissatisfaction has been aroused among the teachers of secondary schools by the extraordinary nature of the leaving certificate results in science. The mark "unsatisfactory" has been placed against the names of the large majority of the candidates. The Scotch Education Department has issued an explanatory circular stating that the mark in question—"unsatisfactory"—was given because the candidates had not studied the subject for the prescribed number of hours. At the same time, it is stated that, "so far as the work had proceeded, the pupils had made *satisfactory* progress." But it is surely a strange misuse of terms to give the mark "unsatisfactory" to work admittedly "satisfactory." The Department gives credit in science and in drawing, not for knowledge acquired, but for time spent, whether well spent or not. Some pupils in one year will learn as much as others in two and even three. But the Department would grind them all down to one dead level. Uniformity is the "blessed" word in Scottish education at present, and everything is being sacrificed to that fetish. The whole educational policy in secondary schools in Scotland is directly opposed to the leading conclusions of the report of the committee of the British Association on the curricula of schools. It is imposed on schools contrary to the judgment and wishes of practically the whole teaching profession, who have petitioned and protested against it, but all in vain. During the autumn session it is probable that a last attempt will be made through Parliament to give secondary education in Scotland the freedom and variety which are essential to life and progress.

PRINCIPAL MACALISTER, of Glasgow University, was the chief speaker on Commemoration Day at Glenalmond. Referring to athletics, he said that he trusted Glenalmond

boys would always keep before them the Greek point of view in all their contests. The Greeks thought a great deal of the training and the struggle, and little of the material reward. They believed that the virtue lay in the contest and the preliminary training, and not in the prize. Every competitor at the Greek games had to take a solemn oath that he had spent at least ten months in strict preparation for the trial. Every runner, therefore, whether he won the prize or not, had the long months of practice and training to the good. The wreath of the winner was honourable indeed, but it would fade. What would not fade was the training of mind and muscle that enabled him to run the race, and that he shared with all who ran with him.

THE Edinburgh vacation courses in modern languages, which have proved so successful in previous years, were inaugurated this session by an address from Prof. Kirkpatrick, hon. secretary of the movement. The Edinburgh courses, he held, are distinguished from similar courses in Great Britain and the Continent by the fact that they not only teach the language and literature of their country to foreigners, but also French and German to their own people. The organisers are able to offer a genuine English "atmosphere" to their foreign friends, and a genuine French and German "atmosphere" to teachers in this country. Prof. Kirkpatrick stated that the French Government has sent twelve of its best professors of English to attend the courses, while the University of Berlin has sent sixteen of its most advanced students of English.

PROF. KIRKPATRICK, in the course of his address, referred to the lamentable position of the teaching of German in Scotland. The new regulations for secondary schools seem to have killed the subject altogether. He could not understand how such a short-sighted policy was tolerated. German is absolutely indispensable to the classical scholar, the man of science, the man of literature, and the man of business. Therefore in the United States, in Russia, France, and many other countries it is made one of the principal staples of education. It is often said that the Germans are "cutting us out" in commerce and in science, and a demand is made for protective tariffs against them. It will serve the purpose equally well if the British youth be made to learn the German language and get to know something of German industry and perseverance.

MR. LLOYD GEORGE, Chancellor of the Exchequer, in fulfilment of a promise made last year by Mr. Asquith, has announced the appointment of a Treasury Committee to inquire into the work and funds of the Scottish universities. This inquiry is quite distinct from the investigations provided for in the Scottish Education Bill now before Parliament. The former deals entirely with Imperial funds, while the latter is concerned with purely Scottish moneys. The duty of the Treasury Committee will be to say how far the universities have made out their claim to additional financial aid from the State.

THE Right Hon. William McEwan, ex-M.P. for Edinburgh, who gave to Edinburgh University the noble "McEwan Hall," has made the University further his debtor by establishing a fund of £6,450, to be called "The McEwan Hall Endowment Fund." The annual income is to be applied towards meeting payment of the ordinary annual expenditure incurred in connection with the maintenance and repair of the hall. The University Court, in accepting the gift, resolved to record in its minutes its deep sense of the generosity of Mr. McEwan.

IRISH.

THE Rules and Schedule, with the Programme of Examinations, of the Intermediate Education Board for 1909 made their very belated appearance in August while schools were on vacation and the first term of the ensuing school year was in sight. Though not containing such revolutionary changes as some recent issues, the new Rules have some important innovations. The most noteworthy is one which forbids a student to enter again for examination in a grade in which he has already passed. This will limit the teacher's freedom in entering a weak student a second time in a grade in which he has barely passed, and make it difficult to advise clever students who are competing for exhibitions, and have a year or more to spare as regards limitation of age. Another rule lowers the amount of the prize fund in the preparatory grade from £1 per student to 10s. This is reasonable, since the amount of awards to students has in past years been nearly twice as high in the preparatory as in the junior grade, where there is severe competition for the prizes and exhibitions, but it would probably have been wiser to abolish it altogether. Another group of rules states precisely the number of marks which must be obtained by a student to entitle him to an exhibition or prize, and also the number of exhibitions which will be awarded in each grade and course. The minimum number of marks for girls is about 20 per cent. lower than for boys in the mathematical and classical groups. The rule concerning a pass by the principle of average is abolished, and there are changes in the dates by which notices, particularly with regard to students presenting themselves for examination, must be sent to the Board.

THE Programme of Examinations follows the usual lines with a few exceptions, some of which, however, are important. The chief concerns the programme in history and geography, the history being changed in several details and the geography being remodelled throughout. While the latter generally follows modern lines, there seems a lack of coherence between the different sections, and we know of no modern book which adopts the same sequence of treatment. That the Commissioners wish to attach more importance to geography is shown by the change in the proportion of marks assigned to it as compared with history, the change being from 30 and 70 per cent. respectively to 45 and 55. Another point to be noticed is that English literature is again introduced into the senior grade, 35 per cent. being given to it and 65 to English composition.

THE Department, too, has made some important improvements in its programme of experimental science and drawing. The syllabus of drawing has been amplified and made more explanatory, and the special courses in physiology and hygiene and in physics have been completely revised. In physics, the third-year syllabus is now to be looked upon as a general physics course preparatory to the more specialised treatment of the subject in the fourth year. In the fourth-year course we have two alternative syllabuses instead of one, the first dealing with wave motion, sound, light, and radiant heat, and the other with electricity and magnetism. The Department is also now beginning to put into force its rules insisting that all teachers whose qualifications are obtained later than 1906 must also qualify in the history, theory, and practice of teaching.

THE report of the Intermediate Education Board for 1907 has also appeared this summer. It follows the usual lines. In 1907 nearly 12,000 students were examined, of whom less than 7,000 passed, the percentage being 57·5, the

lowest for many years. The amount of the school grant was £50,008 16s., which was divided among 320 schools—163 boys', 123 girls', and thirty-four mixed schools. The amount spent in exhibitions was £4,057, in medals and book prizes £1,390; the preparatory grade prize fund was £1,906; and £2,998 16s. 8d. was allocated in bonuses for choirs and orchestras, and £230 in prizes. The period of ten years for which interest on bonds at 2¾ per cent., payable by the Irish Land Commission and guaranteed by the Treasury, expired in February; and negotiations with the Commissioners for the Reduction of the National Debt and the Land Commission have resulted in the exchange of the bonds for £1,000,000 for £1,123,595 10s. 1d. Irish Land Guaranteed 2¾ stock, which will bring in an annual income of £30,898 17s. 6d.

THE report comments on and repeats its statement of 1906 with reference to the absence of permanent inspection as injurious to the present system of intermediate education. Some light was thrown on the controversy between the Board and the Government about inspection by an answer given in the House of Commons by Mr. Birrell during the last week of the recent session. In November of 1905 the Government suggested that this question should be considered in connection with the suggestions of Messrs. Dale and Stephens for the co-ordination of primary and intermediate education. A committee of six was appointed, consisting of two representatives from the National Board, the Intermediate Board, and the Department respectively. The report, dated January, 1906, which was private and confidential, recommended the appointment of permanent inspectors under the Intermediate Education Board. Mr. Birrell refuses to publish the report, and says a scheme for inspection is under Government consideration, and it is hoped a settlement may be arrived at in the near future.

THE Universities Bill has at last passed into law. There were so many attempts to deal with the university problem during last century that, while everyone hopes the new measure will be a success, it is at the same time rash to prophesy. The characteristic of Mr. Birrell's great accomplishment is that he has honestly attempted, so far as warring interests will allow, to follow the lines which the majority of Irishmen desire. The result is a compromise. These interests have excluded Trinity College from the scope of the Bill, have debarred Roman Catholic clergy from being a majority on the governing body of the Dublin University, and have prevented the erection of a chapel within its grounds, but have not excluded the affiliation of Maynooth. It really rests with the laity of Ireland to make the university a success, and if the funds allotted are inadequate, to compensate for this by generous gifts. The University of Belfast will no doubt be successful on the lines of the newer English universities, which will serve it for a model.

WELSH.

IN the new Welsh Code for 1908 reference is made by Mr. A. T. Davies to the use of Welsh. "In last year's Code a definite place in the curriculum of the school was provided for the Welsh language. Welsh was consequently introduced into many schools in which it had not been taught before. It is already possible to trace a twofold effect on the children—an increased interest in their work generally, and a greater appreciation of good English. Careful attention is now paid in the training colleges to the teaching of Welsh, and it should not be difficult in the future, as it has been in the past, to secure bilingual teachers."

IT is delightful to find in the Code suggestions indicating a theory of education, and a theory, too, based on the highest educational principles. Indeed, we might characterise the suggestions of the introduction to the new Code as indicative of the desire to bring the "public school" spirit into the elementary schools. Take such a passage as the following: "Though their opportunities are but brief, the teachers can yet do much to lay the foundations of conduct. They can endeavour, by example and influence, aided by the sense of discipline which should pervade the school, to implant in the children habits of industry, self-control, and courageous perseverance in the face of difficulties; they can teach them to reverence what is noble, to be ready for self-sacrifice, and to strive their utmost after purity and truth; they can foster a strong sense of duty, and instil in them that consideration and respect for others which must be the foundation of unselfishness and the true basis of all good manners; while the corporate life of the school, especially in the playground, should develop that instinct for fair play and for loyalty to one another which is the germ of a wider sense of honour in later life."

IT is to be hoped, as time goes on, that the Welsh Department will be able to infuse into local education authorities the willingness to provide funds to make the conditions and surroundings of the school work appropriate to the carrying out of such high ideals. Two requisites may be pointed out. First, the provision of salaries of a sufficiently high scale to attract men of the finest intellectual and moral gifts for undertaking such responsible work. Secondly, the restriction of the numbers of pupils in each class, that the individual pupils may receive the fitting stimulus both as individuals and as members of the school as a whole. It is, however, noteworthy that our Education Department should lay down before the public and the teachers the wish that the elementary schools should have brought into them the best and the finest of educational spirit, such as has been supposed to be the especial outcome of the highly expensive equipments of aristocratic secondary schools, viz., the public schools.

THE Welsh Members of Parliament have been received by the Chancellor of the Exchequer as a deputation with regard to increased grants to the Welsh university colleges. The Chancellor of the Exchequer directed attention to the fact that he was himself, two years ago, a member of a deputation to the present Prime Minister, who brought about the appointment of the Departmental Committee which had now reported on the education given in the Welsh colleges. The report was entirely favourable. It did not indicate what increased grant should be given. It recommended, for one thing, that the professorial salaries should be increased in order that the colleges should not be denuded of their best men, and any increase that might be made would probably be conditional on its being partly applied to that purpose. The Chancellor's reply was thus that "something would be done" at the earliest opportunity, and he suggested that the report should be considered by a committee of Welsh members, together with one representative of each of the three colleges and the University, and that this committee should submit their views to him to enable him to frame a proper scheme for rendering assistance to Welsh higher education.

A SPECIAL meeting of the members of the Central Welsh Board for Intermediate Education has been held at Shrewsbury in view of the circular of the secretary to the Welsh

Department of the Board of Education with respect to the correspondence and forms of the Welsh intermediate schools, implying the stereotyping of double inspection from the Board of Education and the Central Welsh Board. The following resolutions state clearly the attitude of the Central Welsh Board for Intermediate Education: (1) That the executive committee of the Central Welsh Board is of opinion that it is of vital importance to the working of the Welsh Intermediate Education Act that all forms and correspondence relating to the secondary-school grants shall, as hitherto, be forwarded to the Board of Education through the medium of the Central Welsh Board. (2) The Central Welsh Board, while accepting gratefully the provisional arrangement made between the Board of Education and the Central Welsh Board to minimise the inconveniences of dual inspection, is of opinion that the time has now arrived when duplicate inspection, involving, as it does, overlapping of work, conflicting advice, and unnecessary expense, shall cease, and the duty and responsibility of inspecting and examining schools established under the Welsh Intermediate Education Act, 1889, shall be entrusted unreservedly to the Central Welsh Board, subject to any arrangements that the Board may wish to make in order to satisfy itself as to the work being thoroughly and efficiently accomplished.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Graduated French Exercises and Questionnaires on Accidence and Syntax. By F. E. Robeson. xvi+385 pp. (Rivingtons.) 3*s.* 6*d.*—This book affords welcome evidence of the spread of newer ideas even in such conservative strongholds as Eton, for there are actually twenty-four pages out of the total of 385 devoted to *questionnaires.* It must, however, be added that the rest of the book is very much on the old lines. The outlines of accidence and syntax are clearly expressed; there is a concession to the demand for *Realien* in the nine pages given to time, money, the thermometer, &c.; and then follow exercises, many of which are of the worst kind, being quite needlessly in English. The pupils are expected to translate, *e.g.*, "The mouth of the woman. Of the head of a child. To the ears of the children. To a friend, to an air, to an examination. Those gramophones of that friend. This horror of the arts. Of these uniforms of the officers of the army." The connected passages for translation are often put together with much skill, and some contain interesting matter; but we cannot accept the fundamental idea that the elements of a foreign grammar are best learnt by translating English sentences and passages.

Hossfeld's Short and Amusing Anecdotes for Translation into French. iv+94 pp. (Hirschfeld.) 1*s.*—This collection of fifty-five anecdotes may be acceptable where composition is a subject that has to be taken in an examination; but it would seem that it would have been better to include some serious matter. Some of the stories are quite funny, in others the humour is rather thin, and some (*e.g.*, Nos. 19, 27) are unsuitable for their purpose, as the joke rests upon a pun which cannot be reproduced in French, and so the story in French would be meaningless. The notes consist mainly of renderings of words, phrases, and whole sentences; they are generally satisfactory, but occasionally a difficulty is left unexplained. If the student is given the French for "most people can tell," ought he not to receive some help in translating "Bedlam takes a back seat"?

V. Blüthgen, Das Peterle von Nürnberg. Edited by W. Bernhardt. viii+114 pp. (Heath.) 1*s.* 6*d.*—Blüthgen's story presents a very pleasing and in part humorous picture of Old Nuremberg, which in this edition is further illustrated by some satisfactory photographs. The editor also supplies a few passages for retranslation, and some German questions to be answered; but these are based on the first chapter only, and for the rest of the text the teacher has to make up his own questions. The notes are generally sound; but to translate *mit Kind und Kegel* (p. 67) by "with child and pin" is a queer blunder; *Büble* (p. 69) is used for the singular as well as for the plural; "prow Patagonian" is a quaint American rendering of *tapferer Goliath*; and to call Red Ridinghood a French-German-Swedish fairy-tale is sheer pedantry. The vocabulary is complete.

R. Töpffer, Les Deux Prisonniers. Edited by W. H. Hodges. 75 pp. (Arnold.) 1*s.*—This amusing narrative is taken from "La Bibliothèque de Mon Oncle," and is ably edited. As is the rule in this pleasant little series, the text is divided into sections, to each of which there is a page of exercises consisting of some twenty questions on the text, five or six questions on word-formation and applied grammar, and eight or ten lines for retranslation. There is also a short vocabulary, which does not contain words closely resembling English words. The text is commendably free from misprints.

Practical French Composition for Middle and Senior Classes. Edited by J. E. Mansion. xii+148 pp. (Omega Press.) 2*s.*—This book contains a very good selection of passages for translation into French, to which are prefixed a few expressions that occur in the piece, with the French rendering. The footnotes consist almost exclusively of references to sections in Fraser and Squair's "French Grammar," so that the "French Composition" cannot well be used independently. There is a good English-French vocabulary.

Ellen C. Hainsselin, Le Petit Poucet and *Le Petit Chaperon Rouge.* 23 pp., 24 pp. (Blackie.) 4*d.* each.—We have had occasion to review earlier playlets by Miss Hainsselin, and these present familiar features. They are suitable for performance at prize distributions, where something pretty and graceful is required as well as evidence that French is being taught. For ordinary class use we prefer something simpler and less showy.

Dictionary of Quotations (French). By T. B. Harbottle and P. H. Dalbiac. 316 pp. (Sonnenschein.) 3*s.* 6*d.* net.—In this, the third edition, the French quotations are no longer coupled with the Italian, and a smaller page is used. It has thus become possible considerably to reduce the price. A few misprints have been corrected. In its present form this "Dictionary of Quotations" forms a very convenient book of reference.

Word- and Phrase-book for Siepmann's Public School German Primer. By F. W. Wilson. 86 pp. (Macmillan.) 6*d.*—Mr. Siepmann strongly recommends all teachers using the Primer in their classes to avail themselves of this booklet, and to insist on the regular revision of words and phrases for each and every lesson, so that they may become a lasting possession of the learner. The English renderings appear to have been made with care, and the printing is clear and good.

Classics.

A Syntax of Attic Greek. By F. A. Thompson. New edition, rewritten. xxiv+556 pp. (Rivingtons.) 12*s.* 6*d.*—Mr. Thompson has here, not a new edition, but a new book. The matter has evidently been pondered *nonum in annum*, in fact almost *trigesimum*, and has emerged in a new shape. Let us hasten to add that the new shape is better than the old. It is in many respects simpler, both in arrangement and in statement, and there are useful additions. To the various subdivisions notes are prefixed or added, giving a historical sketch of a case or an idiom, and information useful to the student, such as references to comparative morphology or syntax. Take, as a good example, the account of the dual, p. 19; but note that δύο or δύω is dual in form (p. 20). Sometimes Greek technical terms are given—a useful thing to know, because they have a meaning and throw light on the psychology of grammar. Some subjects, moreover, that are generally taken in scraps are dealt with more as wholes; one is attraction (though the treatment might be fuller with advantage); another is periphrasis (p. 228), a specially important subject for us, because it shows the working of a principle that was to produce the analytic language. We may add, as details, the treatment of μὴ οὐ with the participle (p. 428), and some remarkable uses of μή (p. 440). All the section of the tenses is specially good and clear. And now we may perhaps be allowed to direct attention to some points where the book seems to be capable of improvement. Whilst in matters of general principle and historical knowledge this book is certainly better than its predecessor, we do not think that they are considered enough. In the classification of the cases, for example, the line of historical development is often the easiest to remember, and convenience is only apparently served by ignoring it (as, for instance, on p. 236, the infinitive, and the classification of genitive and dative partly by origin, partly by the accident of the part of speech that may be conjoined). We think also that the historical development is strong evidence for Goodwin's theory of οὐ μή; and we would separate οὐ μὴ with the subjunctive from οὐ μὴ with future indicative, since the independent uses of μὴ with subjunctive and with future indicative are both found in Homer. Mr. Thompson gives an admirable summary of Goodwin's theory and of others, but he does not express a decided view himself except that he postulates one origin for the two constructions. The development from adverb to preposition is very vaguely sketched on p. 5, and the adverb is said to "qualify" verbs. We should be glad to see an example of ἔστιν οἵ (p. 12), which we have never met with: in the oblique cases, ἔστιν οὓς, &c., the origin is dark; perhaps analogy, perhaps the following sentence is the subject. On p. 103 we looked for the Homeric examples of three accusatives (*Il.* xxi. 123, οἵ σ' ὠτειλὴν αἷμ' ἀπολι-χμήσονται). And where is the instrumental with ἐν, Soph. *Ant.* 901, *Trach.* 887, *Phil.* 60? But these are mostly trifles as weighed against the solid merits of the book. There is an abundance of examples taken from all stages of Greek, from Homer to the New Testament, but mostly Attic.

Compendium Latinum. By W. F. Witton. viii+224 pp. (Arnold.) 2*s.* 6*d.*—There are several good points in this book. The explanations given are clear and sensible, and the editor is not content with what is traditional if he can see his way to improve it. Again, the exercises are not all translations, but from the first the pupil is exercised in expressing simple thoughts, telling a story in his own way. He is also exercised in answering questions in Latin. Not too much is given at a time; yet there is room for variety, because Mr. Witton does not stick to one declension alone too long. Such a book depends for its usefulness largely on its arrangement; and Mr. Witton's has certain novelties which seem likely to make the learner's course more natural. However, only experience can show how far this is the case. On the other hand, there is the capital fault that the sentences of the exercises are incoherent, as usual in such books. Thus in Ex. 1 we are introduced to a poet, a pirate, a philosopher, and a slave, not to mention a barbarian, a beast, and a schoolmaster. The poet plants a rose; and the beast mutilates an olive tree, which Mr. Witton's pupils have certainly never seen. If he had had the courage of his convictions, and made all his exercises like the story on p. 11 or that on p. 14, the improvement would have been very great. Another matter for criticism is that the hidden quantities are not marked, nor are any quantities in the latter part of the book. And is the order of words in Latin unimportant? This extraordinary statement meets us on p. 6. On the whole, our verdict on this book is that it is obviously the work of a good practical teacher, who is feeling his way towards a sound system of presentation: but he has not quite found it yet.

A Dictionary of Classical Antiquities. Abridged from Seyffert's. By Dr. Emil Reich. 316 pp. New Classical Library, edited by Dr. Emil Reich. (Swan Sonnenschein.) 3*s.* 6*d.* net.—Dr. Seyffert's name is a guarantee of sound knowledge, and this dictionary is useful as far as it goes; how far that is can only be tested by long use. We have found in it most of the items we have looked for, and we are satisfied with the articles, allowing for their briefness. The dictionary, however, seems to attempt too much: biography, mythology, and antiquities in one volume. There is no guide to show on what principle names are admitted: Cicero is here, but not Scipio; Bacchylides, but not Pericles. The articles on antiquities suffer by the absence of pictures. Probably the book is meant as a companion to the "Alphabetical Encyclopaedia"; but if so, why are some names included?

Altera Colloquia Latina. Adapted from Erasmus, with Notes and Vocabulary by G. M. Edwards. xxiv+136 pp. (Cambridge University Press.) 1*s.* 6*d.*—We noticed Mr. Edwards's first book of Dialogues, and offer a hearty welcome to the second. It will be enough now to give a list of the titles: Not at Home, Tennis, Putting the Weight, Impressions of France, The Horse-dealer Outwitted, Inns in Germany, The Wedding, Capping Stories, The Soldiers and the Carthusian, The Abbot and the Learned Lady, Sancte Socrates ora pro nobis. The text fills fifty pages, and admirable good reading it is. The Latin has been simplified and shortened.

A School Latin Grammar. By H. G. Ford. viii+247 pp. (Methuen.)—This book is too bulky to serve as the simplified grammar which many persons are crying out for; but some simplification has been effected, both in order and by omission, whilst the less elementary matter is marked off by a line at the side in the accidence and placed on the opposite page in the syntax. It is a compact and practical book. But what is the use of a complete paradigm of a deponent verb (pp. 75–77)? We note also that concealed long quantities are not marked long, whilst a number of short vowels are marked short quite unnecessarily. There is only one practical rule for grammars and elementary books: to mark all the longs and leave the rest alone.

The Trachiniae of Sophocles. With a Commentary abridged from the larger edition of Sir R. Jebb. By G. A. Davies. xlviii+204 pp. (Cambridge University Press.) 4*s.*—Several plays in this abridged edition have already been noticed in The School World: the "Trachiniae" is done on the same plan, the translation being omitted, with the more technical and elaborate of the notes. Quite enough is left for all the needs of the ordinary university student or sixth-form boy, and the cost is less than half that of the larger book. We have already expressed our view that this abridgment is not suited for class-work in school, but it is well suited for revision work by those who have already read the play.

Alcestis of Euripides. Done into English by G. W. Cornish, acting editor for University College School. 46 pp. (Fairbairns, 3, Robert Street, Adelphi.) 1*s.* net.—This is an ingenious adaptation of the "Alcestis" to the modern stage, two elders replacing the chorus, and speaking in iambic dialogue instead of singing. In other respects the version is sometimes free. It seems to be well adapted to its purpose as a school acting edition, and we recommend it to the attention of other schools which could not attempt a performance in the Greek.

History.

The English People Overseas. Vol. i. By A. W. Trilby. viii+456 pp. (Francis Griffiths.) 15*s.* net.—"The colonial field of our history remains almost untracked, or marked out only in portions, by men who have written with different aims, seen events from different points of view, sketched in different perspective and painted without reference to the relative importance of their small foreground to the rest of the landscape." We have quoted from the preface to this book, partly because we do not understand the passage enough to condense it and partly because we doubt its accuracy. However, it is in these words that Mr. Trilby gives his reasons for his work. It is to consist of three volumes, of which this is the first. He therein brings the story down to the early years of the nineteenth century. He deliberately excludes the "mass of detail which makes many modern histories so unreadably long," but basing himself on some of the best authorities, and to a certain extent on original material, he tells the well-known story of our Empire in America, India, and Australia. His European history is weak at times, but his main subject is well treated, and if the other volumes fulfil the promise of this, the work will be a good reference book for the teacher and his elder pupils.

The Service of the State. By J. H. Muirhead. xvi+118 pp. (Murray.) 3*s.* 6*d.* net.—This book is founded on four lectures on the political teaching of T. H. Green, given at the summer meeting in Oxford last year by the professor of philosophy in Birmingham University. The lectures must have been difficult to follow, but they make a good book, well worthy of thoughtful study. Prof. Muirhead sets forth, first, some of Green's philosophy of knowledge and then his application of the same to his theory of the State. It is impossible in a few words even to indicate the line of thought, but the general purpose of the thesis is, if we may venture to state it, to reconcile the claims of the individual and the State, as against the opposition between them conceived by Herbert Spencer and the Individualists of the last century.

English History Illustrated from Original Sources, 1485–1603. By N. L. Frazer. xiii+131+vi+154 pp. (Black.) 2*s.* 6*d.*—We have previously noticed the half-dozen volumes of this excellent series as they appeared, and this is quite up to the standard of the rest. It contains more than a hundred extracts from contemporary writers. There are also genealogical tables, bibliographies, date summaries, a map to indicate the position of many of the monasteries, and thirty pictorial illustrations. The only complaint we have to make is that no room is found for even one extract from the writings of Puritans or Separatists, and this side of our ecclesiastical life is mentioned only in the list of dates. Could not Robert Browne's "Reformation without tarrying for any" have been drawn on, even if the Marprelate tracts are too "libellous"?

A History of Great Britain. By E. M. Wilmot-Buxton. xii+335 pp. (Methuen.) 3*s.* 6*d.*—This volume is written on topical lines rather than chronological. Nor are the divisions according to reigns, but according to periods. It is a good idea, and makes a change from the ordinary manuals. The story is, generally, correct, but we could wish for more clearness in the account of the Stuart period. The author should also put his chapters on foreign history before those on constitutional history. It is the former that affects the latter, not *vice versa.* The range of dates is from 449 to 1870. There are twenty maps, an index, and genealogical and other tables.

Lectures on the History of the Eastern Church. By A. P. Stanley. 80+412 pp. (Murray.) 2*s.* 6*d.* net.—A popular edition of the late Dean Stanley's well-known book. It consists of three lectures on ecclesiastical history in general, one introductory to Eastern Church history, six on the Council of Nicaea and cognate subjects, one on Mahometanism, and four on the Russian Church. It was apparently published originally in 1869, and therefore can scarcely be up-to-date. There are a plan of Moscow Cathedral, a map, a chronological table and index, and bibliographies

We have received from Messrs. Oliver and Boyd a copy of Dr. Hume Brown's history of Scotland, the two parts of which we have recently reviewed in these columns. This copy is in one volume, and the only difference is what is necessary to make the join. It is published at 3*s.*, the same price as the two parts together.

Geography.

The Junior Physical Geography. By Dr. W. J. Perry. 114 pp.; maps and illustrations. (Relfe.) 1*s.*—The publishers claim for this book that not only does it contain more information than can be found in any similar publication at the price, but that this information is accurate and trustworthy, and is conveyed in as lucid a form as possible. What more could one want? Eighteen chapters and an index on all the subjects usually treated of in modern text-books on physiography, with astronomical diagrams, maps of isotherms and isobars, pictures of glaciers and gorges—all nicely printed on glazed paper. And yet there is just a slight jar: on the trustworthiness, for instance, when we meet with the antiquated spelling Hooghly (p. 77), on the accuracy when we are confronted once more with the miracle-making Gulf Stream (pp. 77, 98), and on the lucidity when we read such a sentence as "the coral *polyps fastens itself* to a rock."

Philips' Picture Map of London. (Philip.) 1*s.*—This is an "Exhibition Souvenir" printed on a sheet of somewhat easily torn paper, 44×24 in., and folded in a "pictorial" cover. The ground covered by the map extends east and west from the Tower to the Exhibition, and north and south from Lord's to the Oval. It is

therefore a bird's-eye view of London, which, though primarily designed to catch the shillings of the 30,000,000 visitors expected to come to the Exhibition, would not look amiss on the walls of the class-room. It must be pinned low down, though, so great is the detail indicated. It has a reference index to places of interest.

Philips' Outline Elementary Atlas of Comparative Geography. 1*s.* *Philips' Model Atlas.* 8*d.*—On these two recent productions of Messrs. Philip and Son we would make two remarks: (i) the *Outline Atlas* is too complicated for real geographical work; it would tend to mere copy-work, somewhat reminiscent of the drawing books or slates of our grandfathers; (ii) the *Model Atlas* is spoilt here and there by defective colour register. Nevertheless, both are wonderful productions for the money.

Apparatus for the Practical Teaching of Geography.—The increased attention now given to the practical teaching of geography in schools has led to the production of simple and inexpensive apparatus designed to assist such instruction. Messrs. G. Philip and Son, Ltd., have placed upon the market a number of devices of this kind, including a plane table, clinometer, sighting ruler, ranging poles, magnetic needle, &c., at a cost of three guineas the set. The same firm publish an effective means of illustrating projection, designed by Dr. A. J. Herbertson, for 21*s.* net, and a model, for 15*s.* net, intended to show the comparative sizes and distances of the sun, earth, and moon. For the former purpose, the wire shields frequently placed over gas flames in schools can be used effectively by an ingenious teacher; and to impress the idea of the relative sizes and distances of the sun, moon, and earth upon the minds of pupils (though we consider this knowledge of little significance in geography), the best plan is to set an exercise to draw the earth and moon to scale both as regards size and distance, and let the pupils find for themselves that it is impossible to use the same scale for the sun's size and distance in a drawing of reasonable dimensions. There are teachers, however, who prefer models, and the one just produced by Messrs. Philip presents the facts in a novel and instructive way. A new nineteen-inch globe now made by the same firm possesses the advantage of clear print and colouring, and should be of decided service for class demonstration.

Mathematics.

The Oxford Elementary Arithmetics. Three Term. In Script Figuring. By H. A. Jamieson. Pupil's Books, I., 40 pp.; II., 48 pp.; III., 48 pp. Paper covers, 2*d* each. Teacher's Books, I., 32+40 pp.; II., 30+48 pp. 6*d.* net each. (Oxford University Press.)—The difficulties that attend all attempts to make lessons in arithmetic something more than mere drill in rules have now been generally recognised, and the books that are put into the hands of children are gradually changing their character. There is no subject, however, which in its early stages depends so much on the teacher, and the success of the newer methods will depend very largely on the ability of the teacher to use the material that now lies so lavishly to his hand. The books before us are good examples of the newer methods, and the exposition of important principles in the teacher's books reaches a high level; pupil's books and teacher's books taken together provide material for subjecting the newer methods to the practical test of everyday teaching. Experience will probably bring defects to light, but there is, we think, no doubt that the main lines on which these books are constructed are sound, and they should make arithmetic both more interesting and more educative to the pupils.

The Teaching of Practical Arithmetic to Junior Classes. A Manual for Teachers. By J. L. Martin. x+175 pp. (Harrap.) 2*s.* 6*d.*—In this manual great emphasis is laid on the principle that children should have objects to count, measure, weigh, &c.; squared paper and drawing also find frequent applications. That the principle is sound there is general agreement; care must be exercised, however, not to carry it to excess, and there is perhaps a tendency in that direction in the book. But the manual contains a good deal that will be really helpful to teachers, and each one can exercise his judgment in regard to the amount of time to be given to the more practical sides of the work; very much will depend on the children themselves, and it would be foolish to lay down hard and fast rules.

Nelson's Alert Arithmetics. By Henry Wilkinson. Pupil's Books, I., 48 pp.; II., 48 pp. Stiff covers, 3*d.* each. Teacher's Book, II., 40 pp. Stiff covers, 4*d.* (Nelson.)—In these books the "picture" element is very fully developed, and great pains have been taken to make instruction in arithmetic as realistic as possible. The books will, we think, be found interesting by the children; at any rate, the pictures and questions are of a kind that should be well within the comprehension of the average pupil. The teacher's book does not strike us as specially valuable, though it contains some sensible observations.

Advanced Arithmetic and Elementary Algebra and Mensuration. By P. Goyen. xii+435 pp. (Macmillan.) 3*s.* 6*d.*—By "advanced arithmetic" is to be understood fractions, percentages, and, in general, the work taken up in the later years of a school course in the subject. Though the treatment of algebra is very elementary in character, its introduction is amply justified on general grounds, but more particularly in view of the conditions that prevail in the colony in which the author is engaged as inspector of schools. The needs of students who may be working without the guidance of a teacher seem to have been specially considered in expounding general rules and explaining the illustrative examples, and though the exposition seems to us occasionally not quite satisfactory, the impression we have formed of the book as a whole is very favourable. It may be added that the present book is a new edition, entirely rewritten and recast, of the work formerly issued as "Higher Arithmetic and Elementary Mensuration."

Graphic Algebra. By Arthur Schultze. viii+93 pp. (New York: The Macmillan Company.) 4*s.* 6*d.*—Though in the second chapter and in an appendix the applications of graphs to statistics and to problems are considered, the interest of the book is centred in the graphical solution of equations, and chiefly equations of the second, third, and fourth degrees. The exposition is probably full enough for the pupil of good mathematical ability, and the various methods of solution are well represented. The note on p. 23 directs attention to an important point, but seems to us to be badly expressed.

Geometry for Schools (The Theorems). Collected and arranged by E. Fenwick. 128 pp. (Heinemann.) 1*s.* 6*d.* The usual theorems of plane geometry, coinciding in the main with those of Euclid's first six books, are here collected and arranged, the proofs being given in each case; frequently alternative proofs are provided. No problems or exercises are given, so that the book will require to be very considerably supplemented. So far as it goes, the book is quite good, but we do not like the type of text-book; though not necessarily a "cram" book, it may too easily become one.

The "Compton" Slide Rule. (Aston and Mander.) 9s.—The instrument before us is a 10-inch celluloid-faced rule with glass cursor, A, B, C, and D lines on the face, and sines and tangent lines on the back. The rule works very smoothly and seems to be very accurate, quite as accurate, so far as we could judge, as a much more highly priced rule with which we compared it. On the front and back edges of the rule there are two scales; on the rule sent to us both of these scales are inch scales, one decimally divided and the other divided into eighths. It would probably be more useful to have a centimetre scale than the second of these inch scales.

Mathematical Papers. Edited by E. J. Brooksmith and R. M. Milne. (Macmillan.) 6s.—The mathematical papers for admission into the Royal Military Academy and the Royal Military College for the years 1898–1907 are here collected in the now well-known form, and answers are provided where necessary.

Science and Technology.

Notes on the Teaching of Elementary Chemistry. (Teacher's Edition.) 104 pp. 2s. 6d. *Notes on Elementary Chemistry.* (Pupil's Edition.) Vol. i. 180 pp. 2s. 6d. By J. B. Russell. (Murray.)—In these short books an attempt is made to solve some of the difficulties which have hitherto prevented the more general adoption of the research method in the school teaching of chemistry. It is clearly desirable that a class should have some form of text-book. To restrict the pupils to the information which can be gained in practical work, or supplied orally, is quite unnecessary. If only for purposes of revision a connected account of the course of work is of great value. Yet when a text-book is provided it is often used wrongly. The pupils follow the instructions for practical work mechanically; their records of their work are frequently little else than slavish reproductions of the book; they may read ahead and learn what results they may expect in their experiments. In short, they will generally use the text-book to avoid the labour of thinking for themselves. These dangers the author avoids in a novel manner. The book to be used by the pupil is left unbound, so that it can be given out, chapter by chapter, as it is needed. It can then be filed by the pupil in a stout cover, provided with a patent clip on the Stolzenberg system. The master's edition is bound in the usual way, and contains, in addition to the text, a short introduction explaining the use of the book, and dealing with some points of difficulty in the teaching of the subject. A useful bibliography is appended. The text, as at present published, contains in an introductory section the practical and theoretical physics which is the necessary preliminary to the study of chemistry proper, and in part ii. a sequence of experiments on air and combustion. Other sections dealing with oxygen and acids and alkalies are to follow. The discussion of results, which follows the directions for an experiment, is given in the form which it would naturally take in class. A certain amount of historical knowledge is added. The worth of such a book as this can only be tested by actual use in school, but it should prove a valuable aid to those who are attempting to teach chemistry on heuristic lines.

The Solar System: A Study of Recent Observations. By Prof. C. L. Poor. x+310 pp. (Murray.) 6s. net.—The subtitle of this book is a little pretentious, for a large part of the contents is concerned with the results and conclusions of observers of past generations. For instance, in the first chapter, on the moon, there is practically nothing new to record; and in the second chapter, on the earth as an astronomical body, the page devoted to the variation of latitude represents the only noteworthy subject of recent observation. Sir George Darwin's work on tidal evolution is broadly surveyed in the two following chapters, and then follow chapters on the sun, planets, comets, and meteors. Among the advances made in the study of these bodies during the past few years may be mentioned: the photographs of solar prominences and faculæ obtained by the spectro-heliograph; Schiaparelli's observations of the rotation periods of Mercury and Venus, and subsequent work by other observers; the channels or canals on Mars, and their interpretation by Lowell and others; the discovery of the new satellites of Jupiter and Saturn, and the spectroscopic proof of the meteoritic nature of Saturn's rings; the identity of comets and swarms of meteorites, and the revision of the nebular hypothesis as to the evolution of the solar system. These are the chief matters with which Prof. Poor deals, and they are described in untechnical language, so that anyone interested in modern astronomy can comprehend their nature and significance. It is unfortunate that no mention is made of radium in connection with the statement of the means of maintenance of the sun's heat, whereas the theories depending upon contraction and upon meteoritic matter are described. The recent discovery of water-vapour in the Martian atmosphere discounts much of what is said concerning Mars, unless Prof. Poor would place this announcement in the category of doubtful value to which he assigns some other observations of the features of the planet. It is worth suggesting that the satellites of Uranus and Neptune, and the ninth satellite of Saturn, all of which revolve round their primary planet in a retrograde direction, may have been captured from outer space, and are not natural members of the solar system. If this view be tenable, the difficulties in the way of accepting a theory of evolution of members of the solar system from a rotating mass of cosmic dust and gas are at once removed. Limitations of space prevent us from discussing this and other interesting questions raised in Prof. Poor's book. To an astronomer familiar with the progress of knowledge in his branch of science, the volume offers little new either in fact or idea, but to students in other departments of scientific work, and to the general reader, the work may be commended with confidence as a judicial statement of evidence relating to bodies in the solar system.

Animal Life. By F. W. Gamble. xviii+305 pp. (Smith, Elder.) 6s. net.—In the preface we are told that this book was written "in the first instance for those who wish to learn or teach such a survey of the animal pageant as can ally itself with observation and experiment, and in the second place for those who wish to organise their knowledge of animal life." To both classes of readers it may be heartily commended; but the special value of the book seems to us to lie in the breadth of view which Dr. Gamble brings to bear upon the adaptations and factors of animal life he describes. There is an abundance of good books dealing with the facts of zoology, but we are not acquainted with any other single work in which zoological facts of so wide a field are correlated and their significance so happily explained or suggested. The best qualities of Dr. Gamble's style are perhaps more noticeable in chapter iv., on movement, and in the long account in chapter x. of the life-histories of insects, than in the sections dealing with the less tangible parts of the subject; but the book is good throughout, and is a noteworthy addition to the literature of natural

history. The volume contains numerous line and half-tone illustrations. The description of cilia as "hairs" (p. 33) is hardly fortunate, and the term "filtrate" is wrongly used on p. 79. The references to fungi on pp. 88 and 90 may also be revised with advantage.

Modern Electrical Theory. By Norman Robert Campbell. xii+332 pp. (Cambridge University Press.) 7s. 6d. net.—Electrons play a most important part in modern physical theory, and for some time past the want of a systematic account of their properties has been felt by students. Many advanced examination papers now comprise questions on this subject which could not be answered by students who are not in a position to consult the various scientific periodicals in which the latest discoveries are published. For these reasons Mr. Campbell's small volume will be cordially welcomed. Starting with the Faraday-Maxwell conception of lines of force, the subject is developed by the use of the simplest mathematics, and the agreement between theory and experiment is indicated. Explanations are thus found of such diverse physical properties as electrical conductivity, thermal conductivity, the Zeeman effect, kathode rays, radio-activity, thermo-electric phenomena, the Hall effect, metallic reflection, &c. It would perhaps be unduly early to attempt any prediction as to the ultimate reception or rejection of these explanations, but some of the results obtained are unquestionably remarkable. Thus a theory which enables us to calculate the ratio of the thermal to the electrical conductivity of metallic copper from observations made on the electrolysis of dilute sulphuric acid and the density of hydrogen, must receive our most profound respect. Mr. Campbell's treatment of the subject leaves nothing to be desired, and his book contains, within reasonable compass, all that is required by students who are preparing for any ordinary examination.

Sanitary and Applied Chemistry. By E. H. S. Bailey. xxx+345 pp. (New York: The Macmillan Co.) 6s. net.—This work marks a departure from the beaten track of text-books and as such is to be welcomed heartily. It aims at developing common sense in hygiene and in the selection and preparation of food by imparting a broad and thorough knowledge of the underlying chemical principles. This part of the subject is all but neglected in our universities and technical colleges though the writer fully realises the impossibility of putting still more into their already overcrowded courses. Dr. Bailey's book is so written, however, that it can be read with ease by a senior student in his leisure time and it should certainly be in the hands of all schoolmasters. The first portion of the book is entitled "Sanitary Chemistry" and deals with the atmosphere, fuels, heating and ventilation, lighting, &c. No attempt is made to treat these subjects exhaustively or at great length but sufficient is said to inform the reader fully on the general aspects of these questions. The important questions of water and purification of water supplies, sewage and the disposal of household waste and garbage are next treated, following which is a chapter devoted to cleaning and the use of soap and bluing: wherein the reader is shown how to clean leather, wood or marble, to remove grease, paint or ink spots, to clean tarnished silver or polish brass. Finally a variety of disinfectants, antiseptics and deodorants are described. The second portion, some 200 pages in length, deals with the chemistry of food; a great deal of valuable information is concisely and clearly conveyed in this section. The scope covered may be indicated by an enumeration of the chapter headings, which include cellulose, starch, legumes, bread; breakfast and other special foods; sugars, glucose, leaves, stalks, roots, &c., used as foods; composition and food value of fruits; edible fats and oils—the food value of nuts; meats, milk, cheese and butter, alcoholic and non-alcoholic beverages; food accessories; the preservation and colouring of food. A final chapter deals with economy in the selection and preparation of food and with the important question of dietaries: in this some of the more recent discussions on the subject are aptly summarised.

Modern Lithology Illustrated and Defined. By Ernest Howard Adye. (W. and A. K. Johnston.) 10s. net.—The most difficult branch of geology for students working by themselves is the microscopic study of rocks. The verbal statements of text-books, even if supplemented by occasional diagrams, are so easily misunderstood, and it is so difficult for a beginner to disentangle the essentials from the accidentals in what he observes for himself, that without attending a practical course under an experienced teacher it may seem impossible to learn anything. To those who cannot attend such a course, or who follow up a short course of the kind by private work with the microscope, this book will prove a decided boon. It presents a large number of coloured plates of thin sections of well-known rocks easily obtained from dealers. With the actual section, the figure, and the description before him, the student will learn to know these selected rocks and their minerals thoroughly, and he can afterwards proceed with greater confidence to other rocks. A useful glossary of geological terms is included in the book.

The Open Air. By Richard Jefferies. xii+234 pp. (Chatto and Windus.) 5s. net.—Richard Jefferies thought that "sun-painted pictures" were perhaps brighter to himself than to many. It is at least certain that his nature-writings possess an almost unique charm from the vivid impressions they give of the beauty he found in birds and beasts and flowers—for Jefferies was a very accomplished naturalist. The essays here collected contain many examples of his best work, and they are quite happily illustrated by twelve pictures in colour after drawings by Ruth Dollman. The volume is beautifully printed and bound, and all lovers of Jefferies will welcome so attractive an edition of one of their favourite books.

The Fairy-land of Living Things. By Richard Kearton. viii+182 pp. (Cassell.) 3s. 6d.—Mr. Kearton's books are always welcome. The present little volume is primarily an attempt to interest children in the "romantic and wonderful" side of the lives of our native birds, beasts, and insects. Many an older person will, however, be attracted by the author's pleasant treatment of his subject, and will find on almost every page some curious fact of nature lore. The book is delightfully illustrated by reproductions of photographs by Mr. Cherry Kearton.

Pedagogy.

A Century of Education, 1808–1908. By Henry Bryan Binns. 342 pp. (Dent.) 5s.—The book, as its sub-title indicates, is a history of the British and Foreign School Society, which has recently completed a hundred years of honourable work in the cause of education. We must not, therefore, look to it for a general survey of educational activity during the period which it covers. References to the National Society, for example, are fairly frequent, but always from the point of view of an opposing principle. There is no mention of Wilderspin, nor of the Infant School Society in which Lord Brougham, Lord Lansdowne, and other important persons were greatly

interested. Nevertheless, Mr. Binns has given us an authoritative and interesting account of a movement which has rendered invaluable services to English education. The appendices by Dr. Macnamara, Mr. Sidney Webb, Prof. Foster Watson, and Mr. Graham Wallas are in the characteristic vein of their respective authors. The temper of Dr. Macnamara's contribution is not exactly that of the historian. He writes of Mr. Balfour "violating" settlements without apology, "dodging" provisions, disliking school boards and determining to destroy them. Mr. Sidney Webb's democracy is always healthily optimistic, and somewhat "temerariously" he ventures to think that "secondary education in our country is not inferior either in quantity or quality to that enjoyed by the boys and girls of Scotland, of the United States, of Switzerland, of France, or even of Germany itself." Prof. Watson's historical searchlight reveals grounds for supposing that the pupil teacher was a not uncommon institution in the grammar schools so far back as the seventeenth century; and Mr. Wallas, in dealing with the future, writes suggestively of the problem of the town child, of the influence of science alike on method and on curriculum, and, lastly, of the relation between the teacher as expert and the non-expert representative of the people elected to control him.

Course of Study in the Eight Grades. By C. A. McMurry. Vol. i., 1–238 pp.; vol. ii., 1–226 pp. (New York: The Macmillan Co.) Two vols., 6*s.* 6*d.*—These American volumes written by a well-known author, may, *mutatis mutandis*, be extremely useful in our schools. They plead mainly for a scientific correlation of studies, not for the forced correlation which makes a teacher take the geography of northern Italy along with the reading of the "Merchant of Venice"; they plead for a great simplification of our curricula and for the substitution of intense interest instead of *corvée* methods. The most useful part of the books is not their suggestiveness as to method, but their helpfulness in the matter of lists. Thousands of books, pieces, pamphlets are suggested for the teacher's guidance; and though the mass of these is American, yet a large number are English, European, or world classics, and are easily obtainable. But we miss the emphasis which should be laid on every section of school work—Revise, revise, revise! We miss the scientific development of physical powers—Exercise, exercise, exercise! No doubt these are postulated. In England at least they require to be dinned into our ears. It is refreshing to find Dr. McMurry free from the slavery to formal grammar; and it is a treat to see how literature bulks in his work. But best of all is the impression which this book, in its chapters on language, arithmetic, and science, leaves on the reader—that the teacher is the child's elder brother. It is only a matter of intense regret to some of us that the elder brother has long ago in America changed his sex, and with us is changing it as fast as he can, with the active assistance of our home authorities.

Elements of Psychology. By Dr. Sidney Herbert Mellone and Margaret Drummond. 483 pp. (Blackwood.) 5*s.*—This text-book is intended to meet the needs both of the beginner in psychology and of the undergraduate who is preparing for the pass degree; but not infrequently the latter is also the former, one year only being devoted to the subject. The method of treatment is admirable. The difficult and often dry analysis of perception, and the detailed discussion of sensory data, are wisely postponed to the latter half of the work. By developing the view that mental growth is essentially a process of action and interaction between the mind and its environment, the fundamental notion that there is a real bearing on life in the interpretations of psychology is insensibly fostered. Text-book as it is, and professes to be, this little work is a valuable contribution to the educational literature of psychology. The style of presentation is clear, direct, and suited to the main purpose of the work; but it is never dull, and often rises to a level of genuine literary excellence. Adequate references are given to larger and more comprehensive works, and this in no perfunctory manner. The cardinal references are starred, and the student is thus given helpful guidance towards his further reading. At times there is some tendency to pass without due warning from the more strictly psychological to a wider philosophical point of view; but the two are of necessity so closely related that it would be captious to take serious objection to this procedure—even if one cannot unreservedly occupy the same philosophical position. The book may be cordially welcomed as sound and stimulating.

Individual Training in our Colleges. By C. F. Birdseye. 434 pp. (New York: The Macmillan Co.) 7*s.* 6*d.*—To the English reader, unskilled in American slang and acquainted only through books with American methods, it will be a wonder if this volume should be allowed to pass unchallenged. The first part of it is intensely interesting and might have been lengthened, for the inner history of early American colleges is quite as instructive as Lyte's "Eton" and Leach's monographs. The past of England's boyhood rises from the grave when these last-named writers take pen in hand; and it is so in this book with the seventeenth-century American. "No Freshman when sent on an errand shall tell who he is going for, unless he be asked: nor be obliged to tell what he is going for, unless asked by a Governor of the College." We are reminded on every page of Colet, Mulcaster, and Sutton. But when the author has finished with his early chapters a change comes over him, and it is not too much to say that the rest of the book is an attack on the faculties or, as we should say, the dons of American colleges. The attack is more than plain-spoken; it frankly accuses the authorities of colleges of neglect of their duties, of mismanagement of funds, of connivance at and training in dishonesty, and of winking at widespread vice. The following lines may be paralleled on every ten pages: "If the facts as to some of your institutions could be fully known, you would be ashamed to look a yellow journal in the face."

The truth seems to be that the writer is an enthusiastic admirer of the Greek-letter fraternities if well managed: of democratically arranged studies; of hard work at the universities in distinction from "soft culture-courses"; and, of course, of a manly, clean, honourable career. Instead of his ideals he sees everywhere, or nearly everywhere, gross dishonesty in athletics, the unthinking worship of the athlete, "busting-out" (expulsion) of numbers who should never have come to college at all, drinking and vice and idleness, and the multiplication of the failure, the unbusinesslike and the wastrel. To those who think everything is wrong with England and everything right with other countries, this volume will give matter for consideration; but, greatly as we admire the writer's daring and his love of honesty and cleanliness as undergraduates' ideals, we hope that even from the fraternities themselves, if not from the dignified faculties some defence will be forthcoming. If not, we may be sure that the United States will put its house in order.

Art.

Blackie's Nature Drawing Charts. Fifteen sheets, 30 in. x 20 in. (Blackie.)—This publication consists of fifteen sheets, each containing a drawing in bold outline and colour of a flower or plant form, together with enlarged drawings of important details. The examples are well drawn from typical specimens; they are exceedingly clear and distinct, and may be used either as drawing copies or, in conjunction with portions of the natural plant, for the purpose of nature-study. At the foot of each chart are a number of designs purporting to be based on the plant; these are intended to be used as copies for freehand drawing, brushwork, elementary design, &c. The most striking feature about the designs appears to be their originality. Among them are many bold, simple, and graceful forms admirably suited to the purpose for which they are intended; there are, unfortunately, many others which are characterised by an eccentricity which occasionally verges on sheer ugliness. This unfortunate striving after originality is continued in the debased forms of lettering which are allowed to disfigure this otherwise excellent scheme of work.

The Theory and Practice of Perspective Drawing. By S. Polak. 183 pp.; illustrated. (Clive.) 5*s.*—The far-reaching and sadly needed reforms which so completely changed the aspect of the Board of Education syllabus of perspective some years ago brought with them the need for improved methods of teaching, and, incidentally, for a revised and amended text-book. Among the host of text-books that have been published to meet this demand, this, the latest addition to their number, takes at once a high place. The book strikes a happy mean betwixt the "guide" to perspective, which is frequently merely a collection of rules, without any why or wherefore, and the more elaborate and learned treatise which goes far beyond the average student's requirements, and is generally out of reach of his pocket. The emphasis which Mr. Polak places on such points as, for instance, the *reason* for the method of ascertaining the positions of the measuring points, and the ingenious illustrations which he employs to drive home his arguments, show at once that he himself has known and suffered as a teacher of perspective, and that he is fully alive to the pitfalls that beset the unwary student. The book deals exhaustively with oblique planes, shadows and reflections, and gives numerous examples from recent examination papers. The explanations throughout are admirably terse and clear, the diagrams are simple and convincing, and (a consideration for which students will be devoutly grateful) the pages are so arranged that each diagram has its corresponding letterpress on the same or on the facing page. Altogether this is a book to be recommended most unreservedly.

Miscellaneous.

Memories of Men and Books. By the Rev. A. J. Church. 288 pp.; with portrait. (Smith, Elder.) 8*s.* 6*d.* net.—"If, as sometimes happens, one does not want to skip, if one sees with a certain reluctance the pages that are yet to be read growing fewer and fewer, then it will be safe to say that the book is more than good, that it is admirable." These words are taken from Mr. Church's chapter on reviewing, and they describe exactly our feeling as to his book of reminiscences. It is so simply told, so unpretending, and its record so lacking in the sensational, that the reader might be tempted to call it a trivial book: only he reads it, and wants to read more. The fact is that all this simplicity is the result of infinite practice, and shows the finished man of letters. Scores of stories are told, and all make their point; they are not all new, perhaps (though most of them are), and they are told very quietly; but they are all of that delightful humour which keeps the hearer in a pleasant flutter of sympathetic appreciation. Take, for example, the "ghost stories." Mr. Church saw his cook on the stairs, and immediately afterwards went down to the kitchen, and there she was again. There was no explanation. "The thing means nothing—nothing happened; the woman married after an engagement of five-and-twenty years; I performed the ceremony, and my mother gave her a set of false teeth as a wedding present." We never heard a more convincing proof that a ghost was not a ghost.

For readers of THE SCHOOL WORLD there are a few chapters that may be specially interesting, where the old world is described. Merchant Taylors' fifty years ago was no worse than other schools, but the tale sounds incredible to us now. A few of the plagues of the schoolmaster's life, especially the headmaster's, are humorously hinted at, and we wish Mr. Church would give us more; but there is very little about The Curriculum. In fact, there must have been very little curriculum. Pleasant chat about friends and contemporaries, some of them great names, such as F. D. Maurice, and about publishers, fishing, cricket, and the growing of fruit, completes the book. To Mr. Church we say: May your years be long in the land, and may you give us another book like this.

Large Type Wall Sheets of National Songs for Use in Schools. 2 ft. 2 in. by 3 ft. 4 in. (Simpkin, Marshall and Co.) 9*s.* 6*d.* set of 25.—We have often wondered why publishers have not issued maps, diagrams, and charts in this form in greater numbers and variety. In this set each song is printed in clear type on single sheets, and these are bound together in sheets of 25 on rollers so split and screwed that new songs may be added from time to time as desired. The selection is an admirable one, including many national and patriotic songs which may be sung in unison as recommended by the Board of Education. A small but not unimportant point is the fact that its hanging on the wall necessitates the pupils looking up when they are singing, a not altogether reprehensible practice. We have tested the type, and find it clearly visible from the back rows of large classes.

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.

Economy in Science Training.

I WAS much impressed, as I am sure all other economical science masters will be, by Mr. W. G. Llewellyn's letter in THE SCHOOL WORLD for August. In these days of "hustle," matters appertaining to economy are often overlooked.

May I take the liberty of adding one or two other little items which mean much when carried out economically?

(i) An unthinking student will often allow the water to run to waste during the whole of a practical lesson. This means money where a water-meter is installed.

(ii) Returning salts for analysis when finished with to their respective bottles. This may possibly be criticised on account of confusion, and the probable return of, say, No. 6 salt to No. 16 bottle. I have not yet had this experience, although the number of boys in a practical

class doing this work has frequently been more than twenty. The waste occasioned by not replacing the remainder of the salt is considerable in the course of a year.

(iii) The quantity of reagent used is often far in excess of that actually required. When boys are taught to use both their salts and reagents in small quantities, the saving on the chemical bill is greater than one would think. When testing a salt by flame reaction, how often one finds a boy taking hydrochloric acid and the salt far in excess of the amount actually required for the experiment. The strange feature is that the student never realises the waste until it is pointed out to him, but would still go on throwing the greater part of his mixture down the sink, after having used an infinitesimal portion of it in his experiment. It is the cultivation of this thought or spirit of economy in boys that must appeal strongly to the science master; for what better training ground could be obtained for it than the practical science laboratory?

(iv) The abuse of the sulphuretted hydrogen apparatus by younger students is well known, much to the disgust of the olfactory sense. I have found that an arrangement of "choking" down the supply to about two or three bubbles per second answers well, the life of the charge being thereby much lengthened, and the atmosphere of the laboratory being kept much purer.

(v) Mercury is the *bête noire* in a junior physics laboratory; but with properly constructed tables and a firm impression of economy created in the mind of the student, there should be little to fear. Such apparatus as those for illustrating the laws of Boyle and Charles, and involving the use of mercury, are now constructed so that waste of mercury only occurs by mere carelessness.

Lastly, economy of time is a special feature in a laboratory. How often one finds a student watching the heating of a liquid in a vessel instead of utilising that time for preparing something else in connection with the experiment!

Apparatus designed to save time always appeals to boys, and "those who go down to science in laboratories" know full well the advantage of utilising the time devoted to experiments by adopting modified or shorter methods wherever possible. It was with a view to this that I have from time to time described modified apparatus in THE SCHOOL WORLD. Moreover, a boy who commences to think out quicker methods for himself in the laboratory is surely building up the foundation for a successful career in life, no matter to what profession he may be called. Nowadays it seems to be, not the amount we do, but the time we do it in.

E. T. BUCKNELL.

Kingsholme School, Weston-super-Mare.

The Moral Education Congress.

WE beg leave to direct the attention of your readers to the first International Moral Education Congress, to be held at the University of London, Imperial Institute Road, South Kensington, on September 25th–29th.

The Congress is honoured by the good wishes of his Majesty the King. It meets under the patronage of fourteen Ministers of Education, including those of England, the United States, France, Italy, Russia, Belgium, Spain, and Japan. It has also for its patrons fifteen heads of colonial education departments; delegates are being sent by many universities, by all the leading educational associations, and by a number of education authorities; and, finally, the list of vice-presidents and of the general committee includes very many of the leading educationists of Europe.

Of those who are contributing papers, we may mention:—*England:* Profs. Adams, Lloyd Morgan, Mackenzie, and Muirhead; *America:* Profs. Adler and Peabody; *Italy:* Cesare Lombroso; *France:* Profs. Buisson, Boutroux, and Séailles; *Germany:* Profs. Münch, Foerster, and Tönnies; *Russia:* M. and Mme. Kovalevsky; *Hungary:* Profs. Kármán and Schneller. The whole field of moral education in schools will be covered.

The following is the general programme:

(i) "The Principles of Moral Education"; chairman, the President. (ii) "Aims, Means, and Limitations of the Various Types of Schools"; chairman, the Right Hon. Lord Avebury, F.R.S. (iii) "Character-building by Discipline, Influence, and Opportunity"; chairman, M. le Baron d'Estournelles de Constant (Senator). (iv) "The Problems of Moral Instruction"; chairman, Prof. Dr. Friedrich Jodl (University of Vienna). (v) (*a*) "Relation of Religious Education to Moral Education"; chairman, Rev. Dr. Gow (Westminster School). (*b*) "Special Problems"; chairman, Regierungsrat Dr. Gobat (Berne). (vi) "Systematic Moral Instruction"; chairman, Geheimrat Prof. Dr. Wilhelm Foerster (University of Berlin). (*c*) "The Teaching of Special Moral Subjects"; chairman, Cyril van Overbergh (Director-General of Higher Education for Belgium). (vii) "The Relation of Moral Education to Education under other Aspects"; chairman, Prof. Ferdinand Buisson (University of Paris). (viii) "The Problems of Moral Education under varying Conditions of Age and Opportunity"; chairman, the Right Hon. Sir William Anson, Bart. (University of Oxford). (*d*) "Biology and Moral Education"; chairman, Prince Jean de Tarchanoff (St. Petersburg Academy of Medicine).

Special moral instruction lessons will be given in English (Mr. F. J. Gould), in French (Pastor Charles Wagner, the author of "The Simple Life"), and in German (Frl. Jannasch). There will also be an exhibition of books and pictures.

The fee (including a report of some four hundred pages) is 10*s.* 6*d.* for the general public and 7*s.* 6*d.* for teachers. Single day tickets can be had for 2*s.* 6*d.* Return fares on all lines at single fare and a quarter. It is hoped that there will be a large attendance of the general public and of the teaching profession.

Full details may be obtained on writing to the office of the Congress, 13, Buckingham Street, Strand, London.

On behalf of the Executive Committee,

President: MICHAEL E. SADLER.
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Chairman: SOPHIE BRYANT.
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The School World.

A Monthly Magazine of Educational Work and Progress.

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All contributions must be accompanied by the name and address of the author, though not necessarily for publication.

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PHYSICAL FITNESS AS A CONDITION OF THE AWARD OF A SCHOLARSHIP.

By E. W. Maples, B.A., LL.D.

"Each local scholarship system might thus become an incentive to the healthy upbringing of children by making a fair standard of physical development a condition of eligibility."—M. E. Sadler.

During the past three years I have assisted in the oral examination of more than twelve hundred scholars from elementary schools in the county of Middlesex, who have been selected by means of a written examination as those most fitted for the award of junior scholarships. My observations have led me to draw three conclusions with regard to the physical fitness of these pupils—no matter what may be the general character of the physique of children at elementary schools:

(1) That in the great majority of cases the children who were mentally fit were also physically well developed;

(2) That although there were to be found in every district in the county children whose mental attainments were good and physique poor, yet in certain districts the physique of the would-be scholars seemed to be of a distinctly lower type than elsewhere; and

(3) That only a very small percentage of these children could be considered as physically unfitted for the award of scholarships.

In dealing with this question of the physical development of children who are candidates for scholarships, the county of Middlesex, like its neighbours the counties of Kent, Surrey, and Essex, offers the searcher after facts a more comprehensive ground than almost any other county of England. For in the county may be found the town child and the country child, the neglected child from the slums and the well-cared-for offspring of respectable parents. One portion of the county is still rural with here and there a small country town; another portion is densely populated with the number of persons per acre as great as is to be found in the most crowded towns in the country; whilst other portions are still some of London's most attractive suburbs with populations that the respective districts can adequately house.

The attached table shows some striking instances of these different types of districts to be found in Middlesex. The number of scholars given as in attendance at the elementary schools is only an approximate one.

District	Acreage	Population, estimated (1905-6)	Population per acre	Approximate number of children in elementary schools (1905-6)	Percentage of children in elementary schools to the populati n
Tottenham ...	3,013	124,126	41·2	21,280	17·1
Edmonton ...	3,894	54,606	14·0	13,551	24·8
Willesden ...	4,384	140,758	32·1	20.532	17·1
Ealing	2,947	46,000	15·3	5,514	12·0
Hornsey ...	2,875	85,213	30·0	8,489	9·9
Hampton ...	2,036	7,500	3·6	1,300	17·3
Greenford ...	3,041	1,000	0·3	130	13·0
Harefield ...	4,621	2,008	0·4	385	19·1

Two main points may be considered in determining whether any, and if so what standard of physical attainment shall be required from the boy or girl to whom it is proposed that a scholarship should be awarded:

(1) The necessity for taking all possible steps (*a*) to provide against the waste of public money, and (*b*) to ensure that the public money to be expended on scholarships shall be expended to the very best advantage; and

(2) The taking of the greatest care to safeguard the real interests of the would-be scholars, and those pupils with whom they would come in contact.

Dealing with the question in the first instance from this latter point of view, namely, the point of view of the child, it seems an incontrovertible conclusion that only some very serious physical defect should deprive the child of the undoubted advantages which the award of a scholarship offers. Physical defects may be grouped under three broad headings: (*a*) defects which are harmful to the pupil only, which treatment can either remedy or at least render only slightly disadvantageous; (*b*) defects which, while harmful to the pupil only, are of a serious nature, and but slightly, if at all, amenable to treatment; and (*c*) defects which are not only harmful to the pupil, but by their very nature tend to cause harm to the pupils with whom the scholar may be brought into

contact. It may be well to examine each of these groups separately.

The first group of defects includes the majority of the physical ills which are most commonly met with—decayed teeth, defective eyesight, malnutrition, the presence of adenoids, &c.

I find that as nearly as possible 30 per cent. of the pupils selected for scholarships have either teeth or eyes which are defective, and that nearly 10 per cent. of these have both; approximately 20 per cent. suffer from each defect.

A very large majority of the parents of the children thus afflicted seem to have taken no trouble about either the children's teeth or eyesight: a visit to a dentist is undreamed of, except for the removal of an aching tooth; the daily cleansing of the teeth and mouth is regarded as altogether unnecessary; spectacles are looked upon as the heritage of the aged. It is to be hoped that the medical inspection of scholars in elementary schools will bring about a change in these two respects, and that defects so easy to remedy in their early stages, will not be allowed to develop until they become seriously detrimental to the health and well-being of the child. Unfortunately these defects are common among children in all grades of schools. With one exception, however, there seems to be no adequate reason why pupils suffering from any physical defects of this class should be debarred from the award of a scholarship.

The one exception naturally is want of proper nourishment. If the body be starved the brain must suffer. The number of pupils who suffer from want of nourishment, and yet are able to obtain scholarships, is small; it must be remembered that should a child so suffering be awarded a scholarship without due provison being made for proper food, the increased mental strain must assuredly cause a physical collapse. If scholarships are to be awarded to children not properly nourished, they should be given on probation for a short period, and should be withdrawn unless there is real improvement in the child's physique. Justice to the child and to the community providing the scholarship funds alike seems to demand the pursuance of such a course.

The physical defects grouped under the second heading are fewer in number, but more serious in their nature; so far as the question immediately under consideration is concerned, they are usually either some actual physical deformity or some organic disease. The former may be of such a character as to render the award of a scholarship valueless, but otherwise I cannot see any reason why physical deformity should act as a bar. Not only education committees but medical men will differ as to what course should be taken in the case of children suffering from organic disease. It is argued that for such children scholarships are of vital importance, as every opportunity should be given them of earning their livelihood otherwise than by manual labour. Personally, I am inclined to the view that, except in very extreme cases, children thus suffering should not be prevented from obtaining scholarships. Probably they do not number 2 per cent. of the selected pupils.

The third group of defects opens up the wider question as to how far the interests of the children with whom the scholar will come into contact should be safeguarded. The main disabilities met with in this group are (1) phthisis, (2) a dirty condition of the pupil, (3) a liability to fits, and (4) stammering, a pronounced squint, &c.

Under our present secondary-school system, where classes are necessarily large, to my mind all children suffering from phthisis should be refused admission. It necessarily follows that they should not be awarded scholarships.

Unfortunately the second condition named above cannot be passed over, and although the number of would-be scholars thus affected is small, yet it is sufficiently large to require consideration. In the interests of other pupils, it does seem that if the dirty state of a scholar continue the deprivation of a scholarship should ensue.

A child liable to fits is regarded as an undesirable pupil, more particularly in a girls' school: the effect upon the other pupils of the child having a fit in school is distressing; and the award of a scholarship to a child so afflicted can be justified only in exceptional cases.

Stammering, even in the interest of other pupils, should not, I think, be regarded as a bar to the award of a scholarship.

Thus far I have dealt with this question mainly from the point of view of the pupil, and it will be seen that with a small number of exceptions physical unfitness, or rather a deficiency in physique, should not, I consider, deprive a pupil of a scholarship which the pupil's mental capacity would earn.

The other point of view must, however, be considered, namely, that the State should require the utmost return for the money it invests in scholarships. It should lay down the clear rule that no scholarship should be awarded unless, humanly speaking, a fair and adequate return may be expected. Where the mental capabilities of candidates are equal, those possessed of the better physique should obtain the scholarships.

It might be possible to go one step further, to place pupils as a result of the medical examination into three classes—physically fit, physically unfit, and not entirely physically unfit. Those in class one would be eligible, and those in class two ineligible for the award of a scholarship.

If as a result of the mental examination there were candidates physically fit whose marks were nearly as high as those obtained by candidates placed in the third class in the medical examination, preference in the award of scholarships might be given to the former over the latter. In this way something may be done to stimulate parents and to impress upon them the importance of the development of the child's body as well as of the child's mind.

A properly organised system of medical inspec-

tion of pupils will doubtless be of great value in improving the physique of the nation, but it will be deprived of very much of its value unless parents can be induced to learn how vital are all things which tend to the physical well-being of their children.

In the award of scholarships of a special character, as teacher scholarships, more stringent regulations as to bodily fitness will be required, as obviously such scholarships must only be awarded to those who will be physically fitted to undertake the special work for which they desire preparation.

SCHOOL GARDENING.[1]

By D. HOUSTON, F.L.S.
Lecturer on Agricultural Biology, Royal College of Science, Dublin.

DURING recent years a good deal has been said and written on the subject of school gardening, but most of the remarks refer more especially to the art of gardening and to methods of planning, cropping, and general management. There is apparently but little more to be said on this aspect of the subject. What one misses, however, in most of the writings upon school gardening is the spirit of the movement, its possibilities as a factor in education, its power to arouse all the latent imaginative and artistic feelings of the child, its influence on the home gardens of the future, and the recognition of the underlying principle that the initial force in all this is the *teacher*.

There is one thing, first of all, we must recognise, and that is, that an elementary school is not the place in which to teach gardening as such—it must rather be used as a means to an end, and that end the open-air training of the child in all those things associated with the possession and working of a garden.

In many schools the main idea seems to be to have tidy, well-cropped gardens, and so far as can be to make gardeners of the pupils. It is, of course, quite right that the garden should be attractive, orderly, and well cared for; but at the same time the educational development of the child should be placed before the mere desire to have nice-looking and highly productive plots.

We want surely to raise bright, healthy, intelligent children rather than prolific crops of vegetables and fruit. To get, therefore, all the educational possibilities out of school gardening a really good and broad-minded teacher seems to be the first essential. The ordinary gardener (whose services as an instructor are frequently used in this connection), unless he has the qualifications of a teacher, is useless. Men have often been chosen with plenty of technical knowledge but with no power of awakening the interest of children and keeping it. Far better to get men and women with little or no technical skill in horticulture but with ideals in education, a love of nature, and the ability to teach; give them their plots of land, ever so rough and ever so weedy, and their bands of children and the whole thing will be workable.

Not that technical knowledge is not highly necessary; but in no wise is it so necessary as the touch of human nature in the teacher—one who can see the wonder and the beauty always in little things and can lead the children to see them with him.

After all, it is not so much what the child does in the garden so long as he is kept working and interested—so long as the appreciation of the beautiful is stirred in him and the capacity to take pains and to stick at a job until it is done. Great stress should be laid on little things: the tidying of the garden, weeding, path-cleaning, and the clearing away of tools are by no means the least important factors in the child's education.

I saw some such garden once in the making, and it was the best school garden I have ever seen for the value that was got out of it otherwise than in crops. It was a garden attached to a small rural school; the boys and the girls and the teacher did the planning of it and the working of it, learning as they went along. There was a set of simple meteorological instruments made by the senior boys, with which records were taken and daily posted up in the porch. A lawn, which had been once a meadow, had been cleared of its plantain and dandelion, and was now as smooth as velvet; the flower borders and paths were neatly defined with newly whitewashed stones—the children's own work. It was Friday afternoon and the last lesson, when all the school helped in clearing up the garden and leaving it tidy for the Sunday and ready for the Monday. There were some boys working on their vegetable plots and girls at the flower borders; others were straightening the white stones—all the school was at work. There was a general stir in the air, the hum of delightful business. Sometimes a lazy fellow tried to shirk, but he was cheerfully moved on. The teacher, as she passed from point to point, was kept busy with questions, and she found time to give a word of interest and encouragement to every little inquirer. I am assured by this, as well as other rural teachers who have adopted school gardens, that it introduces freshness and vitality into exercises in literary composition, and generally brightens up the ordinary school work, while all the time the out-of-door physical exercise gives such joy to the pupils that the work is ever looked upon as recreative in comparison to the often dreary and, to the child, often unreal exercises of the class-room.

As to the garden itself, it ought if possible to be close to the school, to form, in fact, part of the school, a sort of out-of-door laboratory for practical lessons in applied nature-study, a place where the children can leisurely acquaint themselves with plants and their ways throughout the changing seasons of the year. In addition to the

[1] A communication to the Educational Science Section of the British Association at its meeting in Dublin, 1908.

cropped plots for the senior pupils there might be borders for the cultivation of interesting types of vegetable life—a sort of open-air museum in which the form, habit, and floral modifications of native plants are displayed and demonstrated. With very little trouble special soils could be introduced by the judicious use of tubs or half paraffin oil casks sunk in the ground. In this way the plants peculiar to sand dunes, salt marshes, bogs, calcareous soils, as well as aquatics, could be grown. Indeed, there is truly no end to the things that can be done in, and the uses to which a school garden may be put to by a teacher fully alive to its possibilities and enthusiastic enough to carry his ideas through. In many schools I have visited the garden is almost, if not entirely, reserved for the actual plot workers. This surely is a mistake. The whole school should be interested in it as in the particular case I have mentioned.

For class-room studies and for early exercises in plant culture, "bulbs" are perhaps the most simple subjects. These can be easily grown in pots or jars, using either ordinary soil or peat or fibre, or even washed gravel. Many of these "bulbs" have the advantage of being extremely cheap, but they are all excellent as subjects for first lessons in gardening, as well as for object-lessons in plant physiology afterwards. Children are fascinated with the work, and regard it more as a pleasant pastime than a school task. From this early preliminary work the class can be easily led forward to informal object-lessons on plants, soils, &c., on to more systematic instruction in plant-life, with frequent demonstrations in the garden, and so on step by step until they are old enough to take up entirely the seasonal cultivation of a plot.

It is a commonplace remark to say that all the instruction must be real, that is, it must be based on the child's own observation or experience, and while it is true that the teacher must always be near to suggest and direct, the pupil, so far as possible, must be allowed to pick up the facts for himself, and be sympathetically helped to reason out his own conclusions. It is a most regrettable fact, but very true, that in many schools too much time is wasted in the mere memorising of facts from lesson-books and in the recitation of these facts in the hearing of the teacher. It would be not only a great blessing to the child, but a much-needed awakening to the teacher, to have school gardening introduced and taught in accordance with a system more humane and rational than that wicked old plan of exploiting the memorising powers of the child.

Apart from the immediate influence upon the child, the bearing of school gardens upon the home gardens of the future must not be forgotten. In a country particularly such as Ireland, where, in the majority of cases, the only gardens of the small farmers and cottagers are mere cabbage and potato patches, the value of a nicely kept school garden in each district to stand as a pattern and incentive is sufficiently obvious.

There is another point in connection with school gardens that naturally suggests itself. I have already referred to the garden as an annexe to the school; why should not a portion of it be reserved as a class lawn for an open-air school? The L.C.C. is at present experimenting with open-air schools as a curative system for children suffering from particular kinds of chronic ailments. Why not therefore use them as a preventive against ill-health in the normally strong? It was only the other week that I visited an Irish national school provided with a beautiful garden, well-kept and gay with brightly coloured herbaceous borders. Some boys were on the plots working with easy and apparent delight, because if the day was warm the air was fresh and the body free. But indoors how very different—pent-up lads either fidgety or drowsy, eager to be released from the vitiated air and to have freedom to use their legs and lungs again. Yet outside in the garden there was ample free space to accommodate the two classes laboriously idling their time away inside on geography and in reading.

I happened to be in London a few months ago and was passing a school near the Agricultural Hall, Islington. There was a piece of ground on which some old houses had been domolished to make way for new buildings. The morning was fine, and in one corner a squad of girls was being practised in physical drill, while in another a teacher, seated upon a heap of builder's rubbish, was giving a lesson on reading and elocution to her class, while a third group was busy at something else, I forget what. I need scarcely add that the children were thoroughly enjoying it all. This, therefore, is what we must give to the children in addition to sound teaching—more freedom, more fresh air, more natural conditions altogether; and there appears to me no way by which we can more easily or better secure these things than by the adoption of school gardening in our system of primary education.

TRAINING FOR TEACHING.[1]

I.

By Charles MacGregor.

NO system of training will ever produce finished teachers; but every system should send forth students with some knowledge of the principles and methods of teaching, and with so much skill in practice as will bridge the gap between experience and inexperience, and serve to lessen the difficulties of that first period of responsible work which is often so profitless to the pupils and painful to the teacher. The students should go forth knowing what has been thought and done educationally in the past, knowing the best that is being thought and done in the present, aware that education is in process of evolution, and full of the desire to contribute to its advance.

[1] Abstracts of communications to the Educational Science Section of the British Association at its meeting in Dublin, 1908.

(i) Sound knowledge is the first essential for teaching of the right kind, and any satisfactory system must be based on a sound general education, or must provide for that. The ordinary school subjects of English, science, mathematics, history, and geography should be re-studied with more maturity of mind, on a higher intellectual plane, and in a more philosophical manner than is possible in a secondary or preparatory school. Concentration of effort should also be aimed at, and the subjects not spread over the whole course as in the Écoles Normales, and in some of the German Seminars and of our own colleges.

(ii) The students must know not only the material they are to work with, but also the material they are to work upon. They must go through a serious course of psychology, not introspective psychology only, but experimental psychology, and above all child-study. With the study of the mind must proceed the study of the body, and this also must be thoroughly practical, under a competent medical officer. It might include a little anthropometry. A third part of this division should include a short course in ethics, helping the students to the better consideration of the problems of moral education. All this work—psychology, hygiene, and ethics—must possess a vital connection with the students' work in the schools.

(iii) To the knowledge of the materials students are to use, and the knowledge of the material they are to work on, must be added knowledge of the methods by which these are to be connected and skill in their use. This involves (*a*) history and science of education; (*b*) study of particular methods of teaching school subjects; and (*c*) practice in teaching. Needless to say, these three must be correlated in the closest possible fashion. Detachment is disastrous.

(*a*) The history must be brought up to date, and include the work of Parker and Dewey as well as that of Herbart or Rousseau. There should certainly be also a course of lectures on educational systems of other countries, and at least an introduction given to the valuable stores of material in the Board of Education Reports.

(*b*) In connection with the study of methods there should be a special school where students may see methods and experiments which they are not likely to see in the ordinary schools. Each student should be accustomed to the idea of experiment in education, and each also should have to prepare a thesis requiring observational, if not experimental, work.

(*c*) An effective system of training, besides providing for such school work as will give reality to the studies already mentioned, must allow for an adequate amount of practice in teaching. A student may have an excellent knowledge of methods and yet make a poor use of them.

The period of training for non-university students should be three years, and for university students four.

Outline of Professional Work.

The following is an outline of a suitable arrangement of the professional work for the non-university students.

First Year.—Psychology, experimental psychology and child-study = 100 hours; hygiene = 40 hours; ethics = 20 to 30 hours; two hours per week in the schools, chiefly for observational and experimental work correlated with these subjects.

Second Year.—History and science of education = 100 hours; methods, criticism, and demonstration lessons at the centre = 60 hours; attendance at schools two hours per week during the winter and four during the summer = 80 hours. At the beginning of the summer should be given out the subject for a thesis, to be handed in at the end of the following winter.

Third Year.—About six hours per week of teaching practice, and at least a fortnight's continuous teaching = 150 to 200 hours; work on thesis and oral on same; special study for kindergarten, housewifery, or rural courses = 200 hours.

During the last two years great advance has been made in Scotland in the provisions for the training of teachers. The country is divided into four provinces with centres at the four university towns. The gathering of students into these centres where they can have the best educational facilities has been rendered possible by the grant of use of the public schools for practice purposes, one of the most valuable features of the new *régime*. There are courses of training for elementary- and for secondary-school teachers, as well as for teachers of special subjects. For the last two classes the period of training is one year; for the first class, two years if they are not graduating and three if they are.

The two-year course is, in practice, a fairly crowded one of 1,800 hours, one-third of which are given up to professional work—education, psychology, hygiene, logic, ethics, methods and teaching; the other two-thirds are for "culture-subjects"—science, mathematics, &c. The regulations, however, permit of the omission of any subject of general education from the curriculum. Of the time for professional work, about 250 hours are allowed for the study of methods and practice in teaching. This period is devoted to lectures and discussions on methods, to demonstration and criticism lessons, and to properly supervised practice in the schools. It will be seen that the provisions go a considerable way towards meeting the requirements set forth above.

II.

By Miss C. P. Tremain.

During recent years public interest in educational matters has increased greatly. There is now a tendency to make the provision of the means of education a national, county, or municipal charge, instead of relying on private initiative.

Logically the first step towards improvement in education would be to direct attention to the better professional training of teachers. But

school buildings, equipment, codes and curricula, examinations, and systems of scholarships have received far more attention, and the necessity for teachers being prepared specially for their work on intelligent, rational, and thoughtful lines has been realised only lately. Primary-school teachers, both men and women, secondary-school women teachers, and teachers of special technical subjects form the main body of "trained" teachers, but even of these a large majority are still untrained. Only a very small proportion of men actively engaged in secondary-school teaching, or in directing and inspecting primary- and secondary-school work hold a teachers' diploma.

The training of teachers has three distinct stages:

(i) General education in school, college, or university, where the methods of teaching employed have an important, if indirect, influence on future teachers.

(ii) Professional training in training college or department, where the course should include instruction in the theory and practice of education and in school hygiene. The course should be determined largely by the previous general education of the student rather than by his future work; it should be *intensive* rather than extensive as regards time; it is best pursued alone, not, as in most training colleges for primary-school teachers, along with the general education. The short post-graduate training for intending secondary-school teachers seems to give better results than the longer course for intending primary-school teachers who are pursuing degree and training courses together.

The purpose in studying the theory of education is to induce a scientific habit of mind in approaching educational questions. Practice in education, which includes the preparation and presentation of lessons by the student, the hearing and reporting on lessons given by others, aims at developing and increasing skill in teaching. The aim of training is not to produce finished and perfect teachers, but rather "aspiring" and intelligent persons who will be able to adapt themselves to, and learn from

(iii) The experience stage of training, in which the student passes into the responsible class-room teacher. This has often been the sole training of successful teachers, but the increasing complexity of life, the urgent need for clear ideals on the part of experts to whom democratic educational bodies look for guidance, as well as the needs of the taught, imperatively demand that future teachers shall regard their work from a professional point of view. Those who so regard their work will not feel that finality is reached when a teaching diploma has been obtained, nor even when their pupils obtain brilliant examination results.

Theory and practice should correct and supplement each other. This may be attained through the work of students in demonstration schools and classes, and still more by the active participation in school teaching of all members of the training-college staff. The teaching should be under the most natural conditions possible, and therefore series of lessons in the ordinary course are to be preferred to criticism and the so-called "model" lessons.

Some problems in training which press for solution are—

(*a*) How to adjust the claims of liberal and professional education.—The special difficulties in primary-school teaching, which have caused a premium to be placed on the pupil-teacher system (*e.g.*, unwieldy classes) are gradually disappearing, and many county council schemes show a better way than this for preparing future teachers. Secondary schools are displacing pupil-teacher centres and less actual practice in teaching is required of a student before he enters a training college.

(*b*) How to obtain adequate school practice for those who have had no experience as pupil-teachers or student-teachers.—A demonstration school *plus* classes in schools of different scope and management would seem to afford the best practice. There are special difficulties due to local and other conditions in obtaining adequate practice. Schools are sometimes afraid of admitting graduates who teach under supervision to classes which are entrusted readily to untrained teachers fresh from college.

The work of supervising school practice must be individual; hence training, to be efficient, must necessarily be expensive. The trainer of teachers in addition to good school experience and progressive knowledge of educational principles needs sympathetic insight in dealing with students.

(*c*) How efficiently to test practical work in teaching.—Here there has been a great advance from the examination "show" lesson of earlier days. But it would appear desirable to withhold the full certificate of ability to teach until the young teacher has shown, after experience as a responsible teacher under suitable conditions, his powers as teacher and governor. The executive powers of an individual cannot be tested in the same way as his receptive and reflective powers.

A special difficulty in training at present is that more has to be attempted in the time than can be done efficiently. The secondary school, which is recognised as taking part in the work of training teachers, would render valuable assistance by directing more attention to the subjects which are necessary to every teacher—*e.g.*, the mother-tongue, drawing, clear enunciation, physical culture, &c.

The New Matriculation Sound. By R. W. Stewart. 211 pp. (Clive.) 2*s.*—This is the third of a series of three volumes, devoted to light, heat, and sound, which have been written primarily for the use of students who are taking this branch of physics in the matriculation examination of London University. The author is to be commended in giving a full and satisfactory treatment of vibratory motion and wave motion in the early chapters of the book. The mode of presentation of the whole subject is good, and the student will find the volume to be a trustworthy introduction to the study of sound.

EDUCATION UNDER A LOCAL AUTHORITY.[1]

By R. BLAIR, M.A., B.Sc.
Executive Officer, London County Council.

(i) THE London Council became the Local Education Authority for the Administrative County of London on May 1st, 1904. The Council not only succeeded to the powers and duties of the London School Board, but is also required "to maintain and keep efficient all public elementary schools within the area which are necessary." Further, the Council, which had previously, under the Technical Instruction Acts, been responsible for the supply of technical education, was entrusted by the Act of 1903 with powers relating to all branches of higher education, and was commissioned "to supply or aid the supply of education other than elementary, and to promote the general co-ordination of all forms of education."

All matters relating to the exercise of the powers under the Education Acts, except the power of raising a rate or borrowing money, stand referred by statute to the Education Committee of the Council, and the Council, before exercising any such powers, unless in its opinion the matter is urgent, receives and considers the report of the Education Committee with respect to the matter in question. The Council may delegate to the Education Committee any of its powers under the Education Acts except the power of raising a rate or borrowing money.

The Education Committee is composed of fifty members, of whom thirty-eight are members of the Council, and twelve co-opted members (including six women). The powers and duties of the Education Committee are distributed among eleven sub-committees. The Education Committee is assisted by 180 statutory bodies of managers for provided elementary schools, while the statutory bodies of managers of non-provided elementary schools number 367. In the management of its own secondary schools, training colleges, technical institutes, and schools of art, the Education Committee is assisted by advisory or local sub-committees. The Council also appoints representatives to serve upon the governing bodies of all schools and institutions to which it makes grants.

(ii) Area of the administrative county, 120 square miles; population, 4,795,757. School rolls: *Public elementary*, 734,288; provided, 566,086; non-provided, 165,620. *Public secondary*, 32,010; provided, 3,070; aided, 16,158; non-aided, 12,779. *Technical*, 50,800; provided, 7,700; aided, 38,600; non-aided, 4,500. *Ordinary evening schools*, 121,208. *Training colleges*, 1,363.

In these figures neither the University of London, the Imperial College of Technology, nor the Schools of the University are included, although the Council aids them all.

The Council spends five and a half millions sterling (round figures) on education, £4,500,000 on elementary, and £1,000,000 on higher. The receipts amount to £1,750,000; the rest of the cost falls on the ratepayer. The education rate is 19*d.* per pound; a penny rate raises about £185,000.

The administrative staff consists of 1,000 officers, including forty-one inspectors and twenty-eight organisers; and there are 20,000 teachers engaged in some 3,000 schools or departments of schools of all kinds.

(iii) The Council purchases sites, designs and erects its own schools, equips the schools with furniture, desks, books, and apparatus; supplies fuel and light; does its own repairs; engages, pays, trains and affords further training to its own teachers.

(iv) ELEMENTARY SCHOOLS.—Education is free in all public elementary schools (provided and non-provided). The enforcement of school attendance employs a large body of officers. With relatively few references to the magistrate the average school attendance is maintained at 88·9 per cent. of the average roll.

The subjects of instruction, in addition to those usually found in public elementary schools, include elementary science, nature-study, domestic economy, manual training, physical exercises, swimming, and in certain cases modern languages. A strong endeavour is made by means of conferences and consultative committees to secure in the management of the schools the assistance of the expert views of the 20,000 teachers.

Much attention has been given to medical inspection, a comprehensive system having been established before the passing of the Education (Administrative Provisions) Act of 1907.

Voluntary funds provide meals for necessitous children.

Some 2,000 of the ablest of the children in the elementary schools annually receive scholarships, including free education at secondary schools; in the majority of cases the scholarship-holders are assisted by maintenance grants. There are further scholarship schemes for trade schools and for higher institutions, including the universities. For the weakest, there is medical inspection; for the physically and mentally defective, there are special schools, with a roll of 9,000; and for those not under control, there are industrial and reformatory schools.

Voluntary associations provide play centres, vacation schools, country holidays, and happy evenings for thousands of London elementary school children.

Physical education—including organised games and medical inspection—has received much attention and is going to receive more. Visits to places of educational interest are a feature of the school work. Some of the elementary schools have themselves organised school journeys. The Council has experimented on open-air schools. A

[1] Abstract of a communication to the Educational Science Section of the British Association at its meeting in Dublin, 1908.

small botanical department supplies to the schools 900,000 plants and other nature-study specimens per month.

There is an annual requirement of 1,100 elementary-school teachers. These are in the main obtained by means of the "College List," a procedure understood to be special to London. Some eighty head teachers are appointed annually, according to a scheme of promotion which begins with consideration of the claims of every eligible assistant. A scheme for further training brings the practising teachers into direct contact with the university.

(v) Secondary Schools and Training Colleges.—The Council's policy is to provide or assist in providing secondary education at a moderate fee for those who are able to avail themselves of it, and to offer the advantages of secondary education free of charge to the most promising children from the elementary schools. As previously shown, the secondary schools of London contain 32,010 pupils, 3,070 in the Council's own secondary schools, 16,158 in aided secondary schools, and 12,779 in non-aided secondary schools. These numbers include the students attending the first-grade secondary schools, where the leaving age is approximately nineteen, but they do not include any pupils in attendance at private secondary schools.

The cost of secondary schools, scholarships, the training of teachers, and university education, apart from the administrative staff and loan charges, is estimated at £540,000 for the present financial year. This sum includes £80,000 grant to aided schools, irrespective of scholarships and maintenance of scholarship-holders.

The Council has itself established seven training colleges, with accommodation for 1,900 students in training.

(vi) Technical Education.—The work of polytechnics, technical institutes, schools of art, science, art, and commercial centres, and ordinary evening schools is all being co-ordinated. These institutions, apart from their day work, provide education for 200,000 evening students. The work ranges from repairing the defects of elementary education to education of a university standard, students in some of the polytechnics working as externals or internals for the degrees of the University of London.

The cost of the Council's own technical institutes and schools of art was £53,541 in the session 1906–7, while in the same session £87,249 was paid to aided technical institutions, including the twelve polytechnics. The ordinary evening schools cost £135,880.

H. de Balzac, Le Colonel Chabert. Edited by H. W. Preston. xv+95 pp. (Oxford University Press.) 2s.—Balzac's tale of the military Enoch Arden is in part gruesome and in part distressing. It may serve as an excellent specimen of his unrelenting realism. Mr. Preston's introduction is very good, and so are the notes, to which much care has evidently been devoted.

EDUCATION IN RELATION TO RURAL LIFE.[1]

I.

By Prof. L. C. Miall, D.Sc., F.R.S.

SPECIAL training for the occupations of rural life satisfies the three requisites of natural education, viz., aptitude, inclination, opportunity.[2]

In the near future the practical applications of biology will demand far more serious consideration than they receive to-day. The raising of crops, the management of gardens, the prevention of insect plagues, the food-supply of the sea, are obviously of first-rate importance, and a good supply of trained naturalists competent to advise upon such industries will be found essential to the national welfare. Natural history, which is too often looked upon as no more than an agreeable recreation, is really one of the great and permanent interests of mankind.

The great difficulty is to secure an adequate training for the practical naturalist of the future. It is only thorough knowledge which can satisfy the demands of agriculture and horticulture. First-hand observation, the habit of experiment, and the power to make quantitative determinations will be found in this as in other applied sciences to be indispensably necessary.

Elementary instruction in natural history, even when it is offered to the probable inhabitants of large towns, may profitably lead up to such practical pursuits as horticulture. The natural history will be more real, and intellectually more valuable, if it is directed towards a practical aim.

At present what may be called labour-saving contrivances are far too popular in the classes where biology and nature-study are taught. Of these labour-saving contrivances pictures and lantern-slides, ready-made preparations (dead, of course), printed descriptions, museum lectures, &c., are much recommended and employed. It may safely be said that the knowledge which will help to develop industries is not to be got by such facile methods.

There are already a few teachers scattered over the British islands who are taking a more promising course and striving to lead their pupils to see, to handle, and to think for themselves. Our hopes for the future rest upon the gradual increase of teachers of this type.

II.

By George Fletcher,

Assistant Secretary, Department of Agriculture and Technical Instruction, Ireland.

It seems desirable to define as clearly as may be the nature of the reform desired. It should be plainly understood that there is no desire to displace or supersede the fundamentals of a general education. Indeed, it is less a question of the introduction of a new subject into the curriculum

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[1] Abstracts of contributions to a discussion in the Educational Science Section of the British Association at its meeting in Dublin, 1908.

[2] See the presidential address to the Educational Science Section, p. 381.

than the infusion of a new spirit into the system. So long have we continued to run in the academic groove that primary education seems to have become a thing somewhat remote from the lives of those receiving it; and this want of relation is the more marked in the case of rural schools. The lesson in geography too often deals with a foreign country while the pupil remains ignorant of his immediate neighbourhood. His early steps in art are dogged by the acanthus-leaf—although in this matter we are mending somewhat—while his problems in arithmetic suggest a Stock Exchange rather than the countryside.

It may be admitted that the sole test of the fitness of any subject in the curriculum is its value as an educational agent; but it needs to be recognised that the commonest things in one's everyday environment may be made to serve an educational end. If every school in town and country possessed and utilised freedom to make its surroundings a means of education the problem would be in a fair way to solution. This, however, involves the introduction of the spirit to which reference has been made, and this can only come through the teacher.

The problem then, as in so many cases, resolves itself into the question of the training of teachers. In connection with this, it is desirable to urge the value of carefully arranged summer courses of instruction as a means of affording supplementary training of the type in view, for teachers.

III.

By the Right Rev. Dr. Foley, Bishop of Kildare.

Agriculture should not be regarded as a subject which can be taught in the primary schools by the ordinary school teachers. All that appears feasible in this connection is that there should be central schools in which pupils, who have gone through the primary-school course, would be taught the principles involved in agricultural operations by the county agricultural instructor, or by specially trained teachers under his direction, and working under the supervision of the department of Agriculture and Technical Instruction.

As regards gardening, much could and should be done in the primary schools; and it is satisfactory to know that this was the conclusion unanimously arrived at by a committee consisting of representatives of the National Board of Primary Education and of the Department of Agriculture and Technical Instruction. It was the general feeling of the committee that a good deal could be done by means of suitable object-lessons to familiarise the pupils of the primary schools with natural phenomena, and in this way to prepare their minds for the reception of technical knowledge, should their circumstances put them in the way of obtaining it.

The first thing required is power to acquire school plots compulsorily; and it is hoped that the Chief Secretary will assist in gaining this end. Otherwise it will not be possible to introduce the subject of gardening extensively into the schools of Ireland. These gardens would be of the greatest service to the rural schools, not merely from the utilitarian point of view, but also from that of true education. Nothing is better calculated to impart interest and actuality to the object-lessons in the schools.

The question of the training of the teachers also needs consideration. Although Ireland is an agricultural country, a school teacher is rarely met who has any taste for gardening or agriculture. Hence the work will have to be begun *de novo*, and the foundations laid in the training colleges.

IV.

By Miss Lilian J. Clarke, B.Sc.

School gardens looked after entirely by the children have been found most useful as a means of education. In connection with nature-study lessons the following have been proved to be of the utmost value:

(i) *Climbing plants.*—A convenient arrangement for climbing plants is a screen made of trellis work or wire netting about 6 ft. high, attached to wooden uprights at intervals. It is useful to have these screens even when wall space is available, as children in an outdoor lesson can stand each side of the screen and draw the various contrivances by means of which plants climb. A good selection shows plants climbing by twining stems, stem tendrils, leaf tendrils, petioles, and hooks.

(ii) *Pollination experiments.*—These are especially valuable, as the results of many of these experiments are not known beforehand. The children find out what flowers can be self-pollinated by fixing a muslin frame over the plants or tying up flowers in muslin bags, and thus ascertain what flowers are dependent on visits of insects for the production of fruit.

(iii) *Fruits especially adapted for dispersal by wind, animals, &c.*—It is well to include in the gardens plants which have interesting fruits as well as those which have interesting flowers. Outdoor lessons can be given on the dispersal of fruits by means of plumes, wings, hooks, &c., and the children can see which plants easily spread.

(iv) *Experiments in connection with the food of plants.*—Experiments can be made by placing stencils of tinfoil on the leaves of plants growing in the garden. By means of these the necessity of light for the formation of starch can be shown in a simple manner, and the children learn how important it is for plants to have plenty of light. Nasturtium and sunflower leaves are useful in these experiments, and the plants are easily grown by children.

(v) *Soil experiments.*—(*a*) Growing plants year after year in the same soil without supplying any manure and noting the effect. (*b*) Inoculating plants, such as peas, with bacteria, and comparing the crops produced from similar plants not inoculated. (*c*) Growing plants in various

soils, and noting the effect of the soils on the plants and the different treatments required. It is quite easy to grow plants in chalk, clay, sand, and see the influence of the soil on the life of the plant.

In addition to gardens planned in connection with the nature-study work, the children can own vegetable gardens and learn to grow beans, cabbages, tomatoes, &c., at very slight cost.

A special knowledge of plant-life is gained by looking after the various gardens mentioned above, but, as well as this, the children learn incidentally many things which will be of value to them in rural life.

SCIENTIFIC METHOD IN THE STUDY OF EDUCATION.[1]

By Prof. J. J. Findlay, M.A., Ph.D., and P. Sandiford, M.Sc.

In the paper presented at York, Mr. Findlay confined his attention to experimental studies in school *teaching*, and indicated the lines on which he and others were at work in demonstration schools,[2] associated with departments of education or training colleges. The time now seems ripe for a wider review of methods for the improvement of education which, in a broad sense, may be described as "experimental" or "scientific": experiments in teaching form only one section of a large field which is being worked tentatively in many parts of the world.

(i) A first group consists of investigations which do not directly raise questions of education at all, but are concerned solely with the physical powers of childhood, and their development; they are really questions of physiology and hygiene—a branch of anthropometry. To these may be added inquiries into feeding, clothing, sleep, &c. It must be borne in mind that while such inquiries are invaluable as material for educational proposals, they are not of themselves directly of service, and the interpretations put upon them are often wide of the mark; for the school is a social organisation which has to do its work under complex social conditions.

(ii) Allied to the above may be placed investigations into school appliances, and the physical conditions under which children live while at school. This is a branch of public sanitation, rather than distinctively a matter for pedagogics.

(iii) The third group is concerned with the organs of sense, eyesight, hearing, &c.; and we are still in regions where the physiologist and the physician are at home, rather than the teacher. Their results need to be handed over for the use of schools, but the methods and processes of research are not a distinctive concern for the teacher.

(iv) A fourth group carries us forward to experimental psychology, to research in which the methods of the psychological laboratory are applied to the features of the growing organism as distinguished from the adult.

A large mass of very suggestive research has been undertaken, of which the work on "fatigue" may be taken as typical. The most recent results show the grave difficulties encountered in endeavouring to interpret physical conditions in terms of mind (see Ellis and Snipe, *Amer. Journ. Psychology*, 1903, p. 232).

Experimental psychology, when the subjects of an experiment are children, undoubtedly would appear to have a close bearing upon the problem of the teacher, and a good deal of the work undertaken in Germany, under the title of *Experimentelle Pädagogik* (see Schwarz in *School Review*, Chicago, January to September, 1907) shows that many investigators would desire to see stations for research in genetic psychology established as part of the equipment of departments of education.

It would appear, however, as if the methods of the psychological laboratory are too specialised, and too remote from the positive functions of the school, to be introduced as part of the pedagogical equipment of a university. Rather one would say that such a laboratory ought *to be at hand* wherever advanced work in the study of education is set on foot; and the psychologist ought to be asked to pay special attention to genetic studies in view of the practical importance of any results which he may reach. It is certain that if the laboratory can arrive at new conceptions of the mental life of the young, these results will find an immense field for application in the teaching profession.

(v) Of an entirely different order are the numberless investigations conducted under the name of child-study, especially in America by Stanley Hall and Earl Barnes, and more recently in Germany by Kerchensteiner and others. Here the investigator deals with experience, with mental "content" in ideas and feelings, or output in expression, rather than with mental qualities or faculties. These investigations, when conducted with real scientific ability, have greatly influenced the schools, for the teacher's business is concerned directly with the child's output: the fundamental difficulty felt by the psychologist as to the nature of mind process is largely avoided when attention is confined to achievement.

(vi) All the above groups are conducted on well-recognised lines of control experiments, with quantitative measurements. But they only bring us to the threshold of the school; experiments which touch directly the business of the teacher encounter several difficulties:

(*a*) They need a long period of time for their completion.

(*b*) Disturbing and qualifying factors are always presented, and cannot easily be reckoned with.

(*c*) Methods for estimating results have scarcely as yet been seriously considered.

Such methods must obviously vary for each branch of instruction or school management. Alike in selection of the material of a curriculum,

[1] Abstract of a communication to the Educational Science Section of the British Association at its meeting in Dublin, 1908.

[2] Some of the results of the work in Manchester, as well as an account of the methods employed, are to be found in *The Demonstration School Record*, No. 1. (The University Press, Manchester, 1908.)

in methods of teaching, and in the corporate life of school a great amount of experimental work is being undertaken, but it can seldom hope to be placed on the same footing as regards exactness such as is attained in the earlier groups. Further, such work can seldom be undertaken without some *a priori* bias of general principles as to the underlying aim and function of the school.

It is, however, in this group that the proper business of a department of education centres: and it is here that the scientific attitude is most urgently needed by demonstrators and instructors. Material, method, corporate life—each of these three sections—can be treated from the point of view of scientific method. One of the pressing problems for investigation is to consider principles on which results can be tested: here we should refer to a remarkable inquiry conducted in American cities by Dr. Rice.[1] Our English examining bodies collect every year a large mass of material which could be utilised to capital advantage for research, if means were at hand.

(vii) This leads us to a final group which takes the student outside the school walls—the administration and control of educational institutions. Here we have a field in which the methods of political science offer the model.

This cursory sketch serves to indicate the vast field that lies before the teaching profession when the time comes for the teacher to be trained on lines which demand an approach to scientific method. There are some signs that the Government, which controls so intimately the training of teachers, is beginning to realise its responsibility to take the lead in this work, by affording means to universities and training colleges to make a beginning; the Education Bill of 1906 contained a clause on behalf of demonstration schools. But a fully equipped department of education in a university would be at least as costly to maintain as a medical school. It may be worth while for this Association to set on foot some means for collecting information as to the extent to which work is being attempted (either in departments of education or in schools) of a quality that can make pretensions to be regarded as scientific.

EXPERIMENTAL STUDIES IN EDUCATION.[2]

By Prof. J. A. Green, M.A.

THE grand method of German educational philosophers has held sway long enough to bring the theory of education into some disrepute. The educator is dealing with facts both stubborn and complex. Unless we are to postulate anarchy for one corner of the universe, there are, underlying these facts, uniformities of sequence and co-existence which it is the aim of educational research to lay bare.

Teaching is essentially a synthetic process. Like the farmer, the teacher may be said to prepare his ground, sow his seed, and look for a return. But the scientific farmer recognises varieties of soil and adapts his measures to them. His training embraces the study of agricultural chemistry, though it is a long way from the test-tube and balance to the plough. At the same time, he does not forget that agriculture is finally an affair of the field and of the weather.

Should not education as a subject of university study be aproached in a similar way? Abstract investigations of a scientific and quantitative kind should be possible. These would consist in part, at least, of exercises with individual pupils with the object of a more exact determination of the mental processes of children under instruction. The results arrived at would then be applied to the conditions of the school. The two sides of the work are divorced commonly to the detriment of both. The practising school becomes the demonstration ground of an *a priori* philosophy, and the laboratory loses sight of the fact that pupils are something more than ideational types.

The teacher as such is not primarily a researcher, nor should he be. He wants the result of research in a usable form, and the university department of education should be organised with a view to provide them. Some examples of what is being done abroad will indicate possibilities for such a department on one side of its work.

"Observation" as the foundation of teaching practice has received much attention. By using pictures, Stern found that what children see depends more on inner factors than upon the pictures themselves. Up to seven, children take in only isolated objects; about eight, they begin to notice action; at ten, time, space, and other abstract relations begin to appeal to them; and, last of all, they notice the characteristic qualities of individual things. Kerschensteiner's researches into the development of children's drawing powers are an interesting confirmation of these results. The accuracy of children's observing powers, the influence of suggestion upon them, their educability, &c., are points of importance at which Binet, Lobsien, Meumann, and others have worked. Meumann comes to a conclusion which reads like a paradox: "From the general notion to the particular application is the true order of mental development, and not *vice versa*." Waisemann's investigation into the sensory approach to ideas of number shows the difficulties underlying concrete teaching. He finds that the special grouping of dots is a better avenue than varieties of things, the form, colour, &c., of which distract.

Children's associations have been investigated, and much light has been thrown upon the workings of their minds under school influences by Ziehen, Meumann, Winteler, Schuyten, and others.

The memory of pupils at school has been the subject of much inquiry. On the side of acquisition, it is found to grow steadily during school age, reaching its approximate maximum just at

[1] Published in *The Forum*, from January, 1901 to 1902.
[2] Abstract of a communication to the Educational Science Section of the British Association at its meeting in Dublin, 1908.

the point where elementary-school training breaks off (Meumann). The value of the additional year in the higher primary school is thus not a mere time function. The acquisitive power of memory develops more rapidly under formal training than under the ordinary influence of the school (Van Biervliet).

The importance of a fuller knowledge of individual differences in children will hardly be questioned, and various suggestions have been made for the objective determination of relative capacity. Kraepilin's attempt to express a man in figures, as a steam-engine is expressed in horse-power, though objectionable from many points of view, is a bold attempt to sum up the quantitative study of mental phenomena—attention, grasp, productivity, fatigue-resistance, educability, retentiveness, &c. Binet's work upon intelligence approaches the same problem from a different though highly suggestive point of view.

Laboratories have already been instituted in Antwerp, St. Petersburg, Leipzig, Milan, and Budapest for experimental inquiry into the problems which confront the teacher.

ACQUIREMENT IN EDUCATION.[1]

By G. Archdall Reid.

SOME parts of our bodies—the muscles of our limbs, for example—do not grow after birth unless they are used. Other parts—hair, teeth, and ears, for example—develop fully if only they receive sufficient nourishment. All that is developed under the sole stimulus of nutriment is termed inborn by biologists; all that is added under the stimulus of use is termed acquired. In this sense most of the bulk of the human body is due to acquirement. Mind offers an exact parallel to body. Some mental parts—the instincts, for example—develop in us without the aid of experience, which is the term we use when speaking of the mind. But everything we learn is acquired.

The power or faculty by means of which we learn is termed memory. Memory—the faculty, not its contents—is of two kinds, conscious and unconscious. The conscious memory stores all experiences that can be recalled to mind, the things we have seen, sounds we have heard, and so on. The function of the unconscious memory is every whit as important. Thus ability to walk or read is due to thousands of experiences stored and concentrated in our unconscious memories.

Intelligence and reason are not innate faculties. We learn them just as surely as we learn to walk or read. They are acquired dexterities in thinking. They depend on memory. Intelligence is that faculty by means of which we consciously adapt means to ends. But we cannot *consciously* adapt means to ends unless we have learned to do so. The caterpillar is not intelligent when he builds his cocoon; for he appeals only to that blind impulse we term instinct, which is the very antithesis of intelligence. The man who builds a house is intelligent because he utilises experience. Unlike the adult man, the new-born baby is not intelligent, for he has no experience to which he can appeal. He has only great capacity to learn to become intelligent. Reason is merely glorified intelligence. We have reason, unlike the lower animals, only because our memories are vaster, and because we can learn to be very dextrous in using their contents.

When we send a child to school, we design that he shall learn, not merely knowledge more abstruse than that which he can pick up, like a savage, from the ordinary experiences of life; we intend, also, that he shall acquire right habits of thought. These right habits are acquired mental dexterities. Just as some children can acquire more knowledge and acquire it more quickly than others, so some can learn greater dexterity in thinking, and learn it more quickly than others; but one and all, the quick and the slow, the clever and the stupid, must learn it by means of the memory. An idiot or imbecile is simply a person with a defective memory. He cannot learn knowledge, or he cannot learn to use it, or both.

If we wish to create great skill in thinking, we must create it, as we create great knowledge, by continuing to train our pupils to the latest stage of development over which we have control. Formerly little children were taught nothing but knowledge; now we have invented the kindergarten and the object-lesson. Even the mental training of older boys and girls is improved. But the training of university and college students remains much as it was a hundred years ago. They are still crammed with facts and little more than facts.

The best educational subjects are those which at the same time supply useful knowledge and exercise the thinking faculty. What is useful knowledge? Obviously one condition of its usefulness is that it shall be remembered. The things that we remember are either very impressive things or those which link up with our subsequent experiences, so that we are reminded frequently of them. Much that school or college teaches—for example, the kind of zoology and botany taught to medical students—does not link up with the experiences of the subsequent career, and therefore is forgotten as soon as may be, and consequently is useless.

There is a persistent and growing demand for the substitution of scientific for classical study. Unfortunately all that is meant in many instances by scientific teaching is mere science teaching—the mere cramming of pupils with scientific facts wthout regard to the likelihood of their being remembered, and without care being taken that they are used as materials of thought. It is possible, however, to choose scientific data which link up with the experiences of subsequent life, because they give a deeper and clearer meaning to them; because they help to unify the world the

[1] Abstract of a communication to the Educational Science Section of the British Association at its meeting in Dublin, 1908.

mind creates, and therefore furnish ideal materials for acquiring intellectual dexterity. Only after scientific subjects are scientifically taught shall we be able to demonstrate to the world that the teaching of science is, as it actually is, the best means of creating intelligence.

PSYCHOLOGY AND EDUCATION.[1]

By Prof. E. P. Culverwell, F.T.C.D.

WHILE the application of psychology to the practice of education has doubtless been of great service, there is a dangerous tendency not only to investigate but to *decide* questions of curriculum and method on purely psychological grounds. My chief object is to show that this claim is invalid, and that even our limited knowledge of physiology can give us help in criticising psychological arguments.

The psychological discussion of a question may be as exhaustive as possible, and yet may omit the determining factor; for psychology can never be a science complete in itself. This follows from the fact that changes in mental states may be due to physiological changes which have no mental counterpart—*e.g.*, the whole mental outlook may be changed by a dreamless sleep.

Whether mental conditions are determined wholly when the physiological conditions are given is unknown; yet the following assumptions may be accepted generally:

(1) There is no mental change without a corresponding passage of energy from one region of the brain to another.

(2) To every difference in mental action there corresponds a difference in the mode of this passage of energy.

(3) Whenever a mental state is revived there is some revival of the corresponding passage of energy. In particular we may assume that if the whole mental state is revived vividly, then the original nervous action is repeated closely; if the revival is but faint or partial, then the corresponding nervous disturbance or oscillation is faint or partial compared with the original one.

These assumptions can be applied to a destructive criticism of the psychological argument against the theory of formal education. It follows from them that there is a marked physiological difference between what we commonly speak of as superficial thought on one hand and deep thinking on the other, and that experience alone can exonerate the method of interest from the charge of producing superficial rather than deep thinking.

For consider the difference between concrete and abstract thought. Concrete thinking, if mere recollection, implies the revival in its natural form of the nerve disturbance which originally passed. It also includes a comparison of two ideas in regard to a common element which is strong in both. This is a less complicated operation than to compare them in regard to an element which is weak in both. In the former case the excitation follows the natural path—what we may describe as the path of least natural resistance. In the latter case, however, the excitation has to be of a very special character; it must be so arranged as not to excite the more vigorous—and therefore, as we should suppose, the more easily excited nervous oscillations—and yet it must excite the less vigorous ones. If the thinking be very abstract—*e.g.*, the deduction of a common principle underlying many sense experiences which were not simultaneously received—then it is evident that the stimulation must be of a very specialised kind. The great majority of mankind is unable to stimulate the brain in this way. Instead of keeping so many different brain oscillations simultaneously excited, the nervous energy flows along the path of least natural resistance, and some vigorous element in one of the many images to be compared excludes the other ideas altogether.

The Herbartian argument against formal education, as well as such psychological and physiological arguments as those of Prof. Bagley in his "Educative Process," fall to the ground when examined in connection with the physiological point of view.

It is well to observe that the ordinary man has little power of abstract reasoning. With most men the nervous energy follows the path of natural least resistance, except so far as they are trained. Inconsistent ideas lie side by side in our minds; we can only direct the energy along the natural path. In other words, we take things at their face value. If we had more practice in comparing ideas which lie far apart in our minds (the comparison of which has therefore but little immediate interest), we might see far more deeply than we do. Thus we have no *a priori* right to expect that an education which follows the path of interest will be the best for producing the highest kind of organisation of which a given brain is capable. With some brains no doubt it will. With others it may lead to superficiality.

An instance of the excessive tendency to do away with formal reasoning is to be found in the amount of geometrical construction and example now usual before the principles of true demonstration are entered on.

[1] Abstract of a communication to the Educational Science Section of the British Association at its meeting in Dublin, 1908.

The Nature Book. Part i. iv+32 pp. (Cassell.) 7*d.* net.—If the level of excellence reached in the published parts of this new fortnightly serial is maintained, amateur naturalists, old and young, will have cause for self-congratulation. "Popular, even racy, yet strictly accurate" articles on natural history, profusely illustrated by experts in nature photography, are to appear in each number. Part i. commences with attractive articles on "The Mice of the Field," "How to Know the Clouds," "The Flowers of the Wayside," "How to Know the Birds," and "The Beech and the Oak." The reproductions from photographs are beautifully clear, and a coloured plate—"A Kentish Garden"—forms a charming frontispiece to Part i.

EDUCATIONAL EFFICIENCY.[1]

By T. P. Gill,
Secretary of the Department of Agriculture and Technical Instruction, Ireland.

A NEW university system is about to be organised in Ireland, and the country is being called on to take stock of her whole educational equipment and to consider the end to which she wishes it to conduce. The situation is thus one of general as well as particular interest. What results does the country intend her educational system to produce? By what means does she propose that the results are to be produced? How does she propose to assure herself that she is getting these results? In other words, what is to be the aim, the method, and the test of the educational activity of the nation? It is one of the most practical tasks of the hour in Ireland to consider these questions, and the answers to them should be known and understood by the teachers in every school—from the kindergarten to the university—and, if possible, by every parent.

In connection with the aim of a national system of education it is desirable to examine what is meant by educational efficiency. Efficiency must be considered (1) from the individual and (2) from the social and national point of view. It must be all-round efficiency, physical, mental, and moral —aspects closely related yet distinct in themselves. It is the business of education to develop all three. Again, efficiency is the fitting of the individual (*a*) to pursue efficiently his calling in life, his trade or profession, and (*b*) to be a good man and a good citizen.

The professional, the bread-and-butter efficiency is necessary; and not only is it necessary to aim at it in connection with professional or technical education, but from an early stage in general education it is essential that the pupil should be made to think of what is to be his calling in life, and how he is best to prepare himself for it. This object of education, however, must be pursued in such a way as not to eclipse the higher end of producing the good man and the good citizen. On the contrary, it must be realised that the practical efficiency itself is impaired in proportion as the higher end is neglected or lost sight of. National and individual efficiency in every country has suffered from this error. So has national and individual happiness. Ireland must study to avoid this error.

In connection with methods and tests, the suitability of certain methods and tests to produce the results aimed at must be considered. The influence of the test on the method is sometimes so great that it is impossible to separate them. For instance, the fact that a written examination was imposed by law as the sole test has governed fatally the whole character of the Irish intermediate system for nearly two generations. Tests and methods must vary with the things being dealt with. Physical, mental, and moral things cannot be tested in the same way. The subject, the circumstances, and the end in view must always be borne in mind in devising a test or a method. Moreover, in a test, in considering any one part, we must examine the whole provisionally—see if all the parts are there and if the proportions are right. In other words, the time-table, the vital question of the disposal of the pupil's time, must be taken into account. In a test we cannot look at the individual pupil alone, we cannot judge the pupil apart from the system and the teacher.

Educational tests may be considered under the three aspects, physical, mental, and moral.

(1) Physical: in connection with the general bodily development of the pupil, and the effects of bodily health and occupation upon intellectual efficiency and moral strength; in connection with manual training; and in connection with the question in its broadest sense of discipline, order, and method.

(2) Mental: the aim of producing a logically disciplined mind. The end of testing here to see that the observing and reasoning faculty is being trained rightly; that cram is avoided; that observing, thinking, and correlating power is being developed.

(3) Moral: the test here should aim at ascertaining whether the teachers have the right outlook and influence; whether the pupil is being really led to know, admire, and love the right things; to understand his duties, private and public; to select true aims in life; to develop a noble individuality. The importance, in relation to his moral strength and general efficiency, of making the pupil from an early stage think about his trade, profession, or career in life, and of thus giving a personal and purpose-like character to his education.

How are these aims being followed or hindered in the Irish educational system at the present time, and how far is it practicable, by improvements in the methods of testing or other means, to get them followed more effectively? How far is the work of the system in its different branches, primary, intermediate, technical, agricultural, university, susceptible of development in these directions under existing machinery?

[1] Abstract of a communication to the Educational Science Section of the British Association at its meeting in Dublin, 1908.

THE CORRELATION OF PRIMARY, SECONDARY, AND UNIVERSITY EDUCATION IN IRELAND.[1]

By Prof. Benjamin Moore, M.A., D.Sc.

ONE of the greatest evils in the systems of education in Ireland is the want of co-ordination which everywhere exists. Instead of the three systems forming one interdependent and harmonious whole, each is worked on a separate and entirely independent plan, so arranged as to prevent one system giving assistance or support to the others.

The Board of National Education, which controls the national schools, has entire jurisdiction over the primary system, and in the past has

[1] Abstract of a communication to the Educational Science Section of the British Association at its meeting in Dublin, 1908.

neither sought nor obtained the assistance of the universities in the training of primary-school teachers or the supervision of work and examination.

The Intermediate Board, by means of the funds at its disposal, has attained a similar autocratic and bureaucratic control over almost all the secondary or intermediate schools of the country. This Intermediate Board is not in organic relationship either with the national school system on one hand or the universities on the other, and has isolated disastrously the whole secondary educational system of Ireland.

The universities have in the past taken no share in moulding and guiding either the primary or secondary education of the country, but have confined themselves to training students for entrance to one of the so-called learned professions. The whole nation has suffered from this narrow conception of the educational work of a university, and also the universities themselves have suffered even in that portion of work they have been attempting from the defective preparation of their students at entrance.

The present time, when happily two new and modernly equipped universities are coming into existence in Ireland, appears a suitable moment for considering how these defects may best be removed.

It may be laid down almost as an axiom that, unless the new universities exercise a potent influence on the whole educational system from primary or national schools upwards, they will fail in carrying out their true functions, and of accomplishing the great revival in education which the Irish people have a right to expect, and do expect, from them. The fundamental changes which, it is urged, are necessary in order to bring the three systems into accord and proper co-ordination may be briefly summarised as follows:

Primary or National Education.—The most essential change here is that the training of the teachers should be placed largely under the control of the universities, or of a body on which the universities are represented strongly. The teacher in the primary school is the most important teacher in the country, for he teaches the most preponderating class of the population, and that from which organically all other classes arise. He does not require the special training of the university professor or of the secondary-school teacher, but he does require as perfect a training as can possibly be given to him, and on lines peculiarly adapted to his work. It is fundamentally important that this training should be given to the primary-school teachers by the best intellects the country can afford, and at the highest teaching centre in the country. There should hence, in every modern university, be a Faculty of Education for the training of teachers ranking in honour and standing with the older Faculties of Arts and Science. By intimate contact and fellowship with other university students the primary-school teacher will gain appreciation of what true education is, and will, further, find a liberality of thought and development which can never be attained in a purely technical training college. The existing training colleges for teachers can be utilised for supplying the technical portion of the instruction, but should form an integral part of one or other of the universities.

The nature of the instruction to be given in the national schools, the text-books to be employed, and the nature of revision of work and examination of the primary schools could also be best carried out under the control and influence of the universities, and the present system might be modified readily to this end with the aid of the present *personnel*. These are the more important changes required in primary education in Ireland; the provision of means whereby children of talent and genius could be assisted to a secondary education is easy of arrangement.

Secondary Education.—The chief thing required here is a liberal control by the universities, acting in accord with the teachers of the secondary schools. Nothing can be conceived more fatal to the secondary education of any country than having all its schools cast in one mould and of one pattern.

This is the great evil that the intermediate system has brought about in the secondary schools of Ireland. Instead of the liberal freedom which ought to exist in the higher schools, and the power of the teachers to select books and portions of subjects, to develop their own style of imparting knowledge, and of arranging their pupils and disposing of their time according to their abilities and mental trends, there exists the hidebound system of intermediate education and the attempt to turn one boy out machine-made exactly like another. Why should the same books be read and the same syllabuses followed in every secondary school in Ireland, whether the teacher has sympathy and enthusiasm for them or whether he detests them? What fire and love of learning can any teacher raise in his boys under such a prison system?

Instead of this let each university within its own sphere of influence recognise secondary schools. Let each school so recognised draw up its own system of work, with the approval and, if necessary, with the assistance of the university authorities, and then let the university act as an external authority in sympathy with the teachers, examining the work done and testing the pupils conjointly with the teachers. The work of the university in relation to the examining of the secondary schools would to a considerable extent be that of the external examiner in the university, the teacher himself acting as internal examiner to see that ample justice was done to the pupil. The final examination of the secondary school would then naturally become the matriculation examination of the university, and the best system would have been arrived at for making this entrance examination what it really ought to be, viz., a guarantee that the matriculant had been so educated that he could with profit proceed to the work of the university.

EDUCATION AT THE BRITISH ASSOCIATION.

THE sessions of the Educational Science Section at Dublin were held in the smaller hall of the Royal University. This afforded ample room for the audience, which was perhaps not so large as had been expected. One reason for the comparatively small attendance was the fact that the reception room and many of the sectional rooms were located in Trinity College, at a considerable distance from the Royal University, and this made it difficult for the desultory visitor to drop in at educational discussions. This, perhaps, was not an unmixed evil; at any rate the fine hall afforded excellent practice in the art of speaking aloud, which formed the subject of one of the discussions. The chief educational associations appointed representatives to attend the meeting, the number of delegates this year being greater than in any previous year.

The president of the section, Prof. L. C. Miall, F.R.S., opened the proceedings on the Friday with a most interesting and suggestive address on the subject of "Useful Knowledge." This he carefully distinguished from a knowledge of useful things. Aptitude, inclination, and opportunity are the three main factors in determining what is useful. An eloquent protest against the overloading of the time-table deserves the respectful consideration of school authorities. Prof. Armstrong's paper was entitled "The Outlook: a Grand Experiment in Education," and there was considerable curiosity on the part of his expectant hearers as to the direction in which he proposed to break out. They were perhaps a little disappointed to find that his discourse was chiefly a eulogy of the methods adopted at Osborne and Dartmouth in the education of naval cadets. Whatever may be, and has been, said of the methods of selection adopted by the Admiralty, there seems to be a consensus of opinion that the work done by those who reach these colleges and by their teachers is admirable, and that good use is made of the ideal conditions that exist there. "Learning by doing" forms at least one-third of their educational course, and it is only natural that Prof. Armstrong should give the experiment his blessing.

Sir Oliver Lodge, always welcome, paid a well-deserved compliment to Prof. Armstrong's enthusiasm and pertinacity, and described his own beginnings in science, how he learnt by making things and thinking about them, reading about them because he wanted to know. Mr. Blair's account of "Education under a Local Authority," to wit, the London County Council, described the vast organisation which deals with 3,000 schools, and, by unwonted praise of examinations, bewildered Prof. Culverwell, who followed with an amusing speech. Mrs. Burgwin read a paper on "Schools for the Physically Defective and Mentally Deficient."

Friday's business began with a paper by Sir Philip Magnus, M.P., which formed an admirable introduction to the report of the committee upon the Course of Experimental, Observational, and Practical Studies most suitable for Elementary Schools, which was read to the section by Mr. W. Mayhowe Heller. The report was followed by a discussion on "Education in Relation to Rural Life," introduced by the president, who uttered words of warning against labour-saving contrivances in the teaching of biology and nature-study. Mr. D. Houston, in his remarks on "School Gardening," pointed out that the educational development of the child must come before the desire to have a nice-looking garden and prolific crops. Miss Clarke described a set of school gardens looked after entirely by her girls out of school hours. An interesting discussion followed.

Monday morning was devoted to Irish education, and it was a little unfortunate that the attendance was so small when Mr. T. P. Gill began his address on "Character and Educational Efficiency," the general effect of which on the audience was somewhat depressing. This could hardly have been due to the substance of the paper itself, which took a hopeful view of the future of Irish education. The importance of "stimuli," including not only humane culture but the mastery of a technical calling, in the training of the heart, mind and will, was impressively emphasised. Prof. Benjamin Moore's views on the correlation of primary, secondary, and university education in Ireland are specially important at the present time. He pointed out the need for a Faculty of Education in the new Irish universities, and for all teachers to have a university training. The distance of this ideal became apparent when, in the discussion which followed, reference was made to the salaries paid to teachers in primary and secondary schools. Dr. Evans, of the National Board, and other speakers contested some of Mr. Gill's statements as to past educational history in Ireland, and Dr. Delany suggested that the Charter of the University of Liverpool should be applied to Dublin. He pointed out the advantages, to the university and to the community, of a general body drawn from a wide field. Papers on "Training for Teaching," by Miss Tremain and Mr. C. MacGregor, formed a fitting conclusion to the session.

The final meeting of the section was perhaps the liveliest. It began calmly with the presentation of the report on the Sequence of Science Studies in Secondary Schools, by Mr. G. F. Daniell. This important document deserves the careful attention of science masters. Then followed informal discussions, initiated by the president, on "Note-taking" and on "Clear Speaking and Reading Aloud." In the short time available some useful things were said, and this informal debate may possibly become a regular feature in subsequent meetings. Mr. Archdall Reid gave some original views on memory in his paper, "Acquirement in Education," in which he arrived at the conclusion that the teaching of science was the best means of creating intelligence. Prof. Culverwell disagreed with most of Mr. Reid's

statements, and the upholders of classical teaching, Profs. H. Browne and R. M. Henry, kept their end up manfully. Principal Griffiths poured cold water on the whole discussion, and pointed out the futility of putting different subjects into antagonism. He dated his own "call" from the time when he found that by persistent effort he could overcome difficulties in mathematics.

Prof. J. A. Green's paper on "Experimental Studies in Education" was followed by an account given by Miss Foxley of the "spade-work" which being done in Manchester under the direction of Prof. Findlay. A committee was appointed, with Prof. Findlay as chairman and Prof. Green as secretary, "to inquire into and report upon the methods and results of research into the mental and physical factors involved in education."

The report on the Conditions of Health in Schools, prepared for the Educational Science Section, was presented in the Physiology Section, when a paper was read by Prof. Sherrington on "Instruction of School Teachers in Physiology and Hygiene." It was unfortunate that a joint meeting of the two sections for discussing this paper and report was found to be impossible.

During the meeting members of the section were given opportunities for visiting various schools in the neighbourhood. Dr. Delany obtained permission for members to inspect Maynooth; and Wesley College, Loreto Abbey, Mountjoy School, the Christian Brothers' Schools, and Artane Industrial School were also open for inspection. The Council of the Alexandra College and the Principal received members of the section on the Saturday afternoon, a day on which the fine weather tempted many to open-air studies.

The sectional meetings, considered as a whole, were perhaps hardly so interesting as in some previous years. The most fruitful discussions seemed to be those in which the field of debate was strictly limited; and an opinion was expressed that place might still be found occasionally for discussing the teaching of some special subject. It was even suggested that the last word has not been said on the teaching of mathematics.

OXFORD LOCAL EXAMINATIONS, 1908.

HINTS FOR TEACHERS FROM THE EXAMINERS' REPORTS.

PRELIMINARY.—In the *Elementary Arithmetic* papers of preliminary candidates, the distinction between "factor" and "prime factor" was the stumbling-block over which almost all the candidates fell. The examiners report that it is advisable that linear and square measure should be taught and differentiated more thoroughly. Many candidates lost time through failure to realise the value of a simple decimal at sight. It would be well to make children familiar with the decimal forms corresponding to simple fractions.

Referring to the first period (1066–1399) of *English History*, the examiners point out:

(i) The question as to the rebellions by which Edward II. and Richard II. lost their thrones was hardly ever answered correctly. The concluding words did not seem to have been read.

(ii) In composite questions too much time was devoted to one item—*e.g.*, Hastings or Magna Charta—and the whole paper suffered accordingly.

(iii) The poorer candidates could not distinguish between the Edwards and Henrys.

(iv) The better candidates wrote very well indeed about the Black Death and the Peasants' Revolt.

Commenting on the answers to the paper on the poems set, the *English* examiners point out that question 5, involving an exercise in paraphrasing, brought but few satisfactory answers. A large proportion of the candidates did not realise what was wanted, and of those who did many failed to grasp the sense of the passage, and to express themselves in grammatical and clear sentences. The confusion of "one," "he," "you," and "they" was very common.

Of the answers of preliminary candidates in *Geography* the examiners report that the question which dealt with the "great forests of the temperate zones" was the least satisfactory; the answers seem to prove that few candidates had grasped the idea of the great zonal regions of the world: most of them mention the tiny remains of forests in England.

In the majority of cases the Chilterns were confused with the Cotswold Hills; just as in another question the cotton towns were confused with the woollen towns of Yorkshire. To the questions involving knowledge of large-scale maps good answers were rare. The learning by rote of ill-understood definitions seemed on the wane; but the reproduction of irrelevant matter, evidently so learnt, continued, especially in answers to questions relating to climate. The habitual use of such expressions as "up" for North, and the employment of inferior maps, on which land-relief is ill shown, was very noticeable. In many cases it might be as well that a little more attention should be given to the study of important lines of communication.

The papers in *French* were on the whole weak, both in parsing and in translation. Many candidates, for example, in the sentence *La coutume nous fit faire* parsed *fit* by saying "agreeing with its subject *nous*"; a mistake which shows total ignorance of the elements. The translation also was very inaccurate, and showed very little feeling for the structure of the French language.

In *Algebra*, the simplification of a fraction presented great difficulty to many candidates who forgot that only common *factors*, not single similar *terms*, can be cancelled in numerator and denominator. Candidates should understand that the guessing of the answer to a problem, even when accompanied by arithmetical verification, can have no merit in an algebra paper.

In the *Heat* papers the description of those experiments which the candidates had obviously witnessed was, as a rule, well and carefully done. An exception must be made, however, in the case

of those on the comparison of the conductivities of solids. A very large proportion of the candidates took the rate of rise of temperature along a bar as a criterion of conductivity; while some confused conductivity either with expansion or with thermal capacity. Among a majority of candidates there was a marked inability to apply the knowledge, which they obviously had, to the solution of the simple problems proposed; *e.g.*, very few could explain why the part of an iron bar covered with wool feels warmer than the uncovered part; and why wire gauze is placed under glass vessels when heated. It would be a distinct gain if more practice could be given in the application of principles and facts to easy problems, in order to cultivate clear and adequate reasoning together with a concise and clear style of expression.

Junior.—A question of a very practical nature in the *Arithmetic* paper, requiring the cost from Monday, October 21st, 1907, to Wednesday, July 22nd, 1908, of a penny paper published every weekday, produced an amazing variety of answers. Many candidates did not know the number of days in the different months, nor did they think of 1908 being a leap year, but their chief difficulty was to find the number of Sundays involved.

Of the papers in *English History* (1066–1399), the examiners say that attention must again be drawn to the fact that the "cramming-up" of note-book summaries is not the way to assimilate history; the closely-condensed analytical nature of too many of the answers bears strong evidence of the employment of this faulty method, which, although it may facilitate the task of the examiner, is not calculated to develop the abilities of the student. Candidates must be instructed to take the trouble to read over carefully the paper of questions before beginning to write; this might tend to reduce the enormous amount of utterly irrelevant material which finds a place in the answers. Grammar, spelling (especially in the case of proper names) and style leave very much to be desired; colloquial expressions should be avoided, and slang cannot be tolerated. The descriptions of character were very far from satisfactory; for the most part they consisted of a schedule of adjectives with no facts, or a catalogue of facts with no attempt at inference.

Of the answers in *English History* (1603–1714) we read: "Many candidates, who can give an accurate list of the battles fought during the Dutch War of the Commonwealth, and of the commanders on either side, are unable to explain the true causes of the rivalry. There is general failure to realise the precise points of dispute between Charles I. and the Long Parliament; while the importance of the rise of the party system during the period is practically ignored.

In *English Composition* there was frequently no attempt at punctuation, or commas alone were used, and these at haphazard; the tenses of the verbs were confused; exclamations abounded, while complete sentences were rare; and mistakes in spelling were numerous, even in words transcribed from the question paper. In many of the essays it was evident that the chief aim was to attain length, regardless of the real value of what was written. If the candidates could only be persuaded to devote time to thinking out their subject before putting pen to paper, and rigidly to eschew extraneous matter, the results would be far more satisfactory.

In the answers to the questions on the *Poems of England* few of the paraphrases were of any real value; they seemed to have been written line by line or sentence by sentence, with hardly a glimmer of understanding of the connection or of the meaning of the passage as a whole.

The examiners desire to recommend a very much closer study of the actual text of *Shakespeare*, and greater attention to the meaning and scope of the questions. Far too many candidates send in answers which give information other than that asked for, and therefore can obtain no marks. An effort after greater conciseness is much to be desired.

Commenting on the answers in *Geography*, the examiners say the maps are still very badly done; this being largely due to slovenly work. There is no attempt to print neatly, and many efforts are made to slur over the exact situation or district. The railway routes to the West were often confused; in many instances, in place of a description of the route, there was an irrelevant essay on "Country Life." The part of the work which is distinctly bad is the knowledge of the geography of Southern England. At least ninety per cent. of those who attempted to describe the route from London to Plymouth thought that Kent must be passed through; and seventy-five per cent. apparently think that to describe the country passed through on a journey means a lengthy disquisition on the beauty of the scenery from the railway-carriage window. In a question on the Southern Uplands of Scotland it was frequently almost impossible to decide whether the candidate was attempting to describe the Lowlands or the Southern Uplands. The majority described the Lowlands. The geography of the special region—the Atlantic Region of N. America—did not seem to have been prepared with sufficient care, and the answers to the outline map of this region were on the whole poor. The candidates did not show much knowledge or much ingenuity in dealing with questions of a general type, and their interpretation of the meaning of such questions was often faulty.

The only part of the work in the first *French* paper which was not satisfactory was the question on idioms, which proved a stumbling-block to the majority. For the second paper the unseen translations were not as a rule successful, though both pieces were creditably rendered by some candidates. The style and spelling of many candidates left a good deal to be desired. It would appear that in many schools too much time is devoted to translation; a subject which is naturally more easy to the pupil than any other. The lack of knowledge of the simpler idioms set in the third paper

was very conspicuous and most regrettable. An enormous majority of the candidates imagine that *faillit* comes from *falloir*, and that *ne* after a verb of fearing means "not."

A fair proportion of the candidates taking *Algebra* successfully answered the theoretical questions; but the problem, though attempted by many, was solved by very few, failure being usually due to inability to translate thought into algebraical language. In *Geometry*, the candidates appeared to have devoted too much attention to mere construction at the expense of logical reasoning. The absence of a recognised order of deduction still causes confusion. A very brief verbal reference to a principle assumed in the course of a proof is better than a numerical reference to one of the many text-books. Satisfactory definitions of a right angle were not very numerous, an angle being sometimes identified with *distance*, *area*, or *straightness*. Many of the candidates did not know the meaning of an *escribed circle*. The measurement of constructed lengths was rather inaccurate.

The answers in *Experimental Science* were for the most part verbose, and contained discussions of matters not connected with the questions. The measurements asked for were most often very careless. The candidates, also, after estimating tenths of a millimetre, actually gave areas to four places of decimals. The question on heat was uniformly very badly done. Not more than two or three per cent. of the candidates had any idea of the properties of spring waters. Taken as a whole the work was thoroughly disappointing.

The answers to the "practical" papers were in the descriptive parts irrelevant and fanciful. The meanings of scientific terms, such as "precipitate," "solution," "action of," &c., were but little known, whilst the principles underlying the use of the "specific gravity bottle" were not understood. Weights and volumes were shown up without the actual weighings and measurements from which they were derived being set out, and in many papers there was no account of the way in which the work had been performed.

Only in a very few cases was the solid substance added *to* the acid or alkali in small quantities at a time, and the method of determining whether a gas was being evolved or a solid going into solution was never used.

In doing *Chemical Analysis* a great many candidates obviously followed out a table, learnt by heart, understanding very little the reasons for the various tests and the conclusions to be drawn from them. This is much to be deprecated. If analysis is taught in this way it can have no educational value whatever.

Senior.—The standard of work in *Arithmetic* cannot be considered satisfactory. The methods employed, though for the most part correct, were cumbersome, and the detailed working abounded in inaccuracies. A really neat solution was a rarity. The papers forcibly illustrated the saying that "in arithmetic, untidiness and inaccuracy go together." Moreover, the various steps of the processes were so badly set out as to force the conclusion that the value of arithmetic as a training in the art of reasoning is being underestimated. The difference between *stock* and *money* was not apparent to many, and few candidates knew enough of the nature of discount as to be aware that the charge for discounting a bill is calculated on the period between the date of the transaction and that of the maturity of the bill.

Referring to the answers in *English History* (1603–1714) the examiners report: "In criticism it may be observed that (α) many candidates suffered by failing to read with accuracy the question actually set; (β) the skeleton form of answer was too frequent and was at times so abbreviated as to be almost unintelligible; (γ) greater attention should be paid to a due apportionment of time over the whole paper (some of the best candidates were penalised by the amount of work expended on one question); (δ) while biography was once again well treated, many candidates failed to show any grasp of the real meaning and importance of institutions even when such institutions (*e.g.*, party government) are not mere matters of archæological interest; (ε) the questions on general history outside the special period were answered, when attempted, in a somewhat disappointing manner."

The majority of the candidates taking *English Composition* showed but little aptitude for detecting the errors contained in the faulty piece of English set for correction; while only a very small number succeeded in giving the reasons for their corrections intelligibly. The first person is used too often in the *essay*, and many attempt to write far too much in the time at their disposal. This led to repetition, slipshod English, and general looseness of construction. A good many essays are rather off the point, in such a way as to suggest that the candidates begin writing before they clearly understand the exact meaning of the subject chosen. Some improvement in composition might be made if teachers more frequently encouraged the study of passages from well-known authors as models of style and arrangement.

The quality of the papers in *English Grammar* as a whole was disappointing. The most unsatisfactory results were found in the answers to the historical question, the meaning of which was apparently not grasped by the majority of the candidates. Speaking generally, there was a great tendency to irrelevancy, and in the question on adjectives a surprising number of candidates put down the very things which were excluded by the form of the question. There was much evidence of cramming: definitions perfectly given with wrong examples, and comparatively little originality of critical power. The spelling and punctuation of most of the papers left much to be desired, very few candidates indeed making any use of marks of interrogation. Hardly any understood the difference between accent and quantity, but the questions on metre and the meaning and derivation of words were well done.

Too many papers in *English Literature* showed imperfect study of the subject, and much carelessness. For example, in attempting the question on the gradual development of English prose, a very large proportion wrote a sketch of English literature, confusing prose and poetry together. Again, the question on the poetry of the fifteenth century produced a monotonous succession of answers on that of the sixteenth. The explanation of passages was on the whole disappointing, many candidates omitting it altogether, in spite of the advice given at the head of the paper, while others darkened counsel in masses of confused and wholly unnecessary verbiage. Practice in terse and lucid explanation of passages, giving clearly and fully what is required, neither less nor more, would be of great value in the training of candidates. Many pages were wasted by candidates who attempted to disguise their lack of accurate knowledge under a cloud of vague and verbose generalities.

Speaking generally, the candidates taking *Geography* showed no grasp of the sequence of cause and effect. Facts were set down with no regard to natural order, and with no suggestion of the relation they bear to one another. An explanation of the distribution of rainfall was a mere travesty of the facts. In discussing pastoral areas allusion was rarely made to the great grasslands of the world, still more rarely to the climatic causes that determine their distribution. In the map there was only a vague notion of the relative position of the continents, and the gravest blunders were common in drawing and numbering a few parallels of latitude. Practically no knowledge of historical geography was shown. The answers as a rule were exceedingly verbose, and very often irrelevant. Far too little attention has been paid to general principles and to their application in particular cases.

It is necessary to point out, the examiners say, that there seems to be real danger *either* of allowing pupils to devote too much attention to broad generalisations of the subject before they are sufficiently acquainted with the *data* on which these are based, *or* to restrict themselves to mere topography.

The work of translation from the *French* was below the level of previous years. It bore evidence of superficiality and carelessness, with frequent disregard of the simplest forms of accidence. A noticeable feature was the increased prevalence of high-sounding English words or catch phrases to which the candidate could not attach any meaning, but which had been selected on account of some fancied resemblance in sound or spelling. The passage for translation into English presented few difficulties of vocabulary—hardly any words that candidates might not be expected to know. On the other hand, in some of the sentences the construction was not quite obvious, and the majority made no effort to master it, but rendered word for word. The answers to questions on grammar were as a rule weak and uncertain. In free composition an advance was shown on previous years, though there was a tendency to invent rather than describe, and the scheme of the question was not sufficiently closely maintained.

Much better work would be produced if pupils were taught to think out the best method of answering each question in *Algebra* before actually beginning to answer it. They should not be allowed to work sums by formulæ, as, *e.g.*, in quadratic equations, progressions and permutations, without first clearly showing that they understand the meaning of the formulæ used. Valuable time was often lost by ruling unnecessary lines.

The style in the *Geometry* answers was generally somewhat slovenly and careless; where there were two cases of a proposition to be discussed both were rarely given, minor details of proofs were much neglected, and there was much looseness of statement. The best work came from those candidates who appeared to have learnt their geometry from Euclid. Attempts to prove that the angles of a plane triangle are together equal to two right angles by means of the idea of rotation were as a rule quite worthless, and the attempts to deduce a proposition concerning a tangent to a circle from a proposition concerning a chord were unsatisfactory, very few candidates indeed being able to treat a limit sensibly or rigorously, while the majority of them did not appear to understand the word "deduce," but treated it as equivalent to "prove" or "state," and often stated and proved any theorem concerning a tangent that they happened to know. A very prevalent practice, which must cause a great waste of candidates' time, was that of writing out the enunciation of every question on the paper and carefully drawing a corresponding figure when they had no answer to go with it. As scribbling paper is provided, candidates can ascertain whether they can do a question before commencing it on the paper which they intend to give up.

READING BOOKS GALORE.

A LARGE and varied parcel of small books comes from Oxford (Frowde). Lytton's "Harold," with six illustrations (1*s.*); the Oxford Reading Books III. and IV., containing a great deal of fresh matter—even a *résumé* of Peter Pan—all illustrated (1*s.* each); the Oxford Story Readers—"Don Quixote," "The Escape of Desmond Burke," and "Gerald's Long Journey" (4*d.* each); along with books for very little children, "Ellie and her Cousins" and "Rainbow Gold" (2*d.* each). Three elementary books of verse (2*d.* and 3*d.* each) are, so to speak, introductory to a book of verse in three parts by L. C. Smith (4*d.*, 6*d.*, and 1*s.* each). This is an admirable anthology, the second part being especially original.

Messrs. MacDougall send "The Tempest" and "As You Like It" for school reading (3*d.* each), and "Gulliver's Travels" and "A Legend of Montrose" (5*d.* each). Scott is also represented by

"The Talisman" (Chambers, 1s.) and "The Bride of Lammermoor," with introduction, notes, and index (Black, 2s.). Messrs. Chambers also send "Tom Brown" (1s.) and some smaller books ("Ali Baba" and "Sindbad," 2d. each). No publisher has yet succeeded in taking Dr. Clouston's suggestion that anyone who could and would write "Tom Brown" for the primary school would put millions of children in his debt. Could not Mr. Pett Ridge try?

Messrs. Nelson send a beautiful book, "Golden Gifts" (a reader), full of good illustrations (1s. 6d.); but why they should have allowed the picture on p. 189 to be duplicated in such a comic fashion on p. 1 of "By Meadow and Stream" (4d.) is something that even they could not satisfactorily explain.

A first folio "Julius Caesar" (Harrap, 2s. 6d.) is a delightful edition, though not cheap. Bacon's Essays is edited by Dr. Howe (1s. 6d.); who, instead of giving many notes, asks many questions. The Essays are much too hard for any but a sixth form: and one hour is not enough even for a cursory examination of the shortest essay. The Essays have been thoroughly edited by Reynolds and Abbott; but these are too large for school work; and no one but a very wide reader can be set to read Bacon, Milton, or Lamb with a school class. But why should not the Essays be given in their old print and spelling? As they are edited to-day the virtue has gone out of the page.

Messrs. Heath send Macaulay's "Lays," also with hard questions (1s.). There are, we suppose, twenty editions of the "Lays" in the market; there is not one with more than ten illustrations. The book will bear three hundred illustrations; and the schoolboy would love them and learn from them, as he loved Caldecott's "Old Christmas."

"A Book of Poetry illustrative of English History," Part I., by Mr. G. Dowse (Macmillan, 9d.), ought to have been longer. There is no modernised Anglo-Saxon in it, nor any Langland, nor any Chaucer. We have had "Carmina Britanniae" and "Songs of England"; but the book of literature illustrative of English history has yet to be compiled. It requires very wide reading and out-of-the-way reading in folk-song, ballad, and foreign literatures to do it well.

"English Odes" (Bell, 1s.) is a well-chosen selection, but any practical class teacher would wish for the omission of a few lines: the same may be said of almost any school anthology published: you cannot expurgate too carefully when dealing with numbers of readers in a class. Besides, nine-tenths of the poetry we set children to admire was written for men and women.

A copy of More's "Utopia" (2s.) and of "The Merchant of Venice" (2s.) are sent by Messrs. Clive. There is nothing to be said about the new editions of these classics: they are made on the old lines, and as yet there is little sign of any edition of any school book which is not obviously dedicated to the goddess of the examination room. Miss Cunnington alone has edited such a book and has reaped her reward—it is unknown.

Messrs. Heath also send De Quincey's "Joan of Arc" and the "English Mail-Coach" (1s.). We welcome De Quincey for the schools: he must be read in large doses. Perhaps the "Revolt of the Tartars" and "Autobiographic Sketches" will follow.

Mr. Frank Sidgwick has edited "Old Ballads" for the Cambridge Press (1s. 6d.). Many of these old ballads are new. Few editors are brave enough to put in "Edward" and the "Lykewake Dirge."

USEFUL KNOWLEDGE.[1]

By Prof. L. C. MIALL, D.Sc., F.R.S.

I PROPOSE to speak to you about useful knowledge, and you will, I think, admit the importance and the appropriateness of the subject. But you may be surprised that I venture upon so wide a theme. For my part, I maintain that the extent of a subject gives no notion, however vague, of the time required to discuss it. If you have a quarter of an hour and a sheet of paper you may employ them with about equal probability of success in delineating a hand's breadth of greensward, or the British Isles, or the whole world. Bossuet handled universal history from his own point of view in a volume of no more than six hundred octavo pages, and Buffon[2] remarks, quite truly, that every subject, no matter how vast, can be treated in a single discourse. You will observe with satisfaction that I deny myself the commonest and most plausible excuse for an unduly prolonged address; that, I mean, which pleads the magnitude of the subject.

I do not wish to exaggerate the importance of useful knowledge. It is not everything, nor yet the highest thing in education. There are things we rarely mention in a British Association section, which are perhaps best left undiscussed, except where there is entire sympathy between speaker and hearer; some of these stand above useful knowledge of every kind. But the fact that useful knowledge occupies nearly all the school time shows its practical importance, and disposes us to welcome any means of making it more effective.

BOOK-LEARNING.

The knowledge of books may be an excellent form of useful knowledge; it may also, when it strives merely to record and remember, be unproductive and stupefying. Let me give you an example, by no means an unfavourable one, of the book-learning which becomes sterile for lack of method and aim. My example shall be the elder Pliny, Pliny the naturalist, who lost his life in an eruption of Vesuvius, and whose many virtues were piously described by his nephew, Pliny the younger. The elder Pliny wrote a voluminous Natural History, and left behind him 160 books of unused extracts. His appetite for reading was insatiable. Reading filled all the hours which could be spared from public duties or snatched from sleep. Once, when a friend interrupted the reader to correct a mispronunciation, Pliny asked, "Did you not understand?" "Yes." "Then why did you interrupt? You have made us lose ten lines." The Natural History compiled during years of such reading is wholly uncritical; any testimony is good enough for

[1] From an address delivered, as president, on September 3rd to the Educational Science Section of the British Association, at the Dublin meeting.

[2] "Discours à l'Académie."

the most improbable story. We look in vain for interpretation, combination, or inference. The facts are indeed rudely sorted, usually according to subjects, but sometimes alphabetically. The chief use of Pliny's Natural History has been to promote the fabrication of more books of the same kind.

Pliny, with his unlimited appetite for knowledge and his very limited power of using it, might seem to have been taken as a pattern by scholars. Like him, they have amassed knowledge in heaps. It has been the ambition of many scholars to read everything that was worth reading, and to fill great volumes with the imperfectly digested fragments.

In the ages of learning, the schoolmaster, too, became a pedant. His chief duty he supposed to consist in furnishing his boys with knowledge which they might some day want. If it were not that Nature has endowed schoolboys with a healthy power of resistance, their memories might have come to resemble the houses of those who believe that whenever they throw a thing away they are sure to want it again—houses in which room after room is so packed with antiquated lumber as to be uninhabitable.

The Renaissance called up men who made a vigorous protest against unused learning. Rabelais put into grotesque Latin his opinion that the most learned scholars may be far from the wisest of men.[1] Montaigne said over again in pointed phrases what common-sense people had been saying for ages, that he who knows most is not always he who knows best; that undigested food does not nourish; that memory-knowledge is not properly knowledge at all.[2] Erasmus wondered at the practical ignorance of the scholars of his own days—"Incredibile quam nihil intelligat litteratorum vulgus." Locke refused the name of knowledge to book-learning; real knowledge, he held, was mental vision. In the educated man he valued virtue, wisdom, and breeding (manners), ranking them in this order; learning came last of all.[3]

Happily for us, a great deal that we once knew and might foolishly wish to keep quickly fades from the memory. What we remember so greatly exceeds what we can use that we need not deeply regret the loss that is always going on. When people explain to us how much valuable substance is wasted by want of care in selecting and preparing our food, I reflect that all of us consume twice or thrice as much food as we can do any good with, and then I am consoled. It is not nearly so necessary to know more things as to know them better, to know what to do with them.

No doubt we often find it necessary to recall a multitude of small facts, in order, it may be, to elicit a general conclusion or to produce a telling argument. But is it wise to prepare years in advance by storing all the facts in the memory? I cannot think so. Exercise of the memory involves nervous strain, and after an early age a considerable nervous strain. It is more economical and more business-like to employ mechanical contrivances rather than brain-tissue for such purposes, to leave the vast mass of useful facts in grammars, dictionaries, and text-books, and to collect those for which we have a present use in the note-book or the card-index. There is another appliance which the serious student finds almost as useful as the note-book or the card-index—I mean the waste-paper basket.

The history of learning warns us that it is not good to lay up in our memories a great store of knowledge whose use lies far in the future. Unused knowledge, like unused money, becomes corrupt. Uncritical, ill-mastered knowledge is at its best a knowledge of useful things, which, as Hazlitt points out,[1] is not to be confounded with useful knowledge.

Science.

It is the function of science to produce verifiable knowledge. Science achieved her earliest successes by investigating the simplest properties of tangible things—number, form, uniform motion. Here she learned how to combine the knowledge of many concrete facts into general statements, which (to the confusion of thought) we call scientific *laws*. Science applies her general statements to new cases, using facts to make general statements, and general statements to discover or verify facts, so that a considerable part of scientific knowledge is in perpetual use. Science is no longer content with the study of simple properties and tangible things. She will consider facts of every kind as soon as she can find the time. There is no hope of withdrawing from scientific treatment any kind of experience which the human senses or the operations of the human mind furnish; to be safe from the inroads of science you must betake yourself to some study which does not meddle with facts.

Generalisation involves incessant reference of effects to their causes. Facts can only be ill-classified and superficially generalised so long as the causes of the facts remain uninvestigated. Science of any good kind sets up, therefore, the habit of methodical inquiry and the habit of reasoning—productive reasoning, we might call it, to distinguish it from the reasoning of the schools. The best examples of productive reasoning are to be found in the investigations of science, and especially of those experimental sciences which deal with simple tangible objects, whose properties can be studied one at a time.

The virtues of science are exactness, impartiality, candour. Scientific impartiality means the determination to accept no authority as binding except the assent of all competent persons. Scientific candour means perpetual readiness to revise opinions which are held in respect. Loyalty, except of one kind, loyalty to herself, science has no use for and does not cultivate.

I think it is true, but you can judge as well as I, that during the last four centuries there has been no generator of useful knowledge at all comparable with science.

The Place of Science in Education.

Herbert Spencer has raised the question: What knowledge is of most worth? He considers knowledge in its bearing on life and health, on the gaining of a livelihood, on citizenship, on artistic production and enjoyment; lastly, as a means of discipline. The answer which he gives under each head is "Science"; that is his verdict on all the counts. A decision so clear, which is, moreover, powerfully and even eloquently supported, cannot fail to be impressive. It is naturally welcome to those who are devoted to the cause of science, and we can all see that, if accepted, it will simplify many troublesome questions. Will it not guide us in choosing a school staff, in drawing up a curriculum, in fixing the future occupations of our children?

But we must first scrutinise the verdict itself. Let us begin by putting a preliminary question so as to remove all risk of ambiguity. Who or what is to possess the knowledge the worth of which is to be estimated? Spencer seems to contend that for everybody and in all possible circumstances science is that knowledge which is most valu-

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1 "Magis magnos clericos non sunt magis magnos sapientes" (Frère Jean des Entommeures in "Gargantua," i. 39).

2 "Essais," i. xxv.

3 Rabelais, Montaigne, and Locke have been collated by Quick in his edition of the "Thoughts Concerning Education."

1 *Round Table*, "Classical Education."

able, but this is a conclusion hard to receive. There are persons who are intellectually unfit to acquire the scientific habit of mind, or who follow an occupation incompatible with any but a light and recreative study of science. Suppose that a youth is wholly uninterested in science; or that after fair trial he shows no capacity for it; or that he is eager to become a poet; or that he will inherit a lucrative business in which science plays no part: would not these propensities and circumstances modify our choice? I cannot believe that Spencer was so unpractical as to deny them any weight at all. Is it possible that he was thinking of mankind, of the British nation, or of some other large collection of men; that it is to the nation or the race that science will prove itself of most worth? If this is the right interpretation, we have some ground for blaming Spencer's neglect to mention so important a qualification. Those who admit that the nation requires scientific knowledge beyond knowledge of any other kind are not compelled to maintain that the individual man must give his chief attention to science. An elementary knowledge of many sciences, such as Spencer valued and himself possessed, steadily becomes less attainable, and less applicable to real business; less attainable, because the standard is always rising; what was a respectable acquaintance with science in the days when Spencer was educating himself would now be thought no better than a smattering; less applicable, because business now requires and commands the science of experts. Business demands the very best science that the age can supply, and it can afford to pay high enough to get it. Obviously the best knowledge of any kind can only be possessed by a few.

Those who agree with me that the science which is applicable to industry or to public health is steadily growing harder of attainment will not, I hope, turn this into an argument for restricting the study of science to a few. The elementary science of the school, if good of its kind, is valuable for its effect upon the character and the intelligence; it is necessary for the timely discovery of young people who can be trained to carry on scientific discovery; and it engenders a sympathy with science which is of high importance to the State. If the science of the school does no more than make the phenomena of everyday life a little more comprehensible and a little more interesting, it will fully justify itself.

Spencer would, I feel sure, have admitted that even when science is to be the chief occupation of after-life, it should not occupy more than part of a well-ordered course of school-study. The chemist or physiologist often requires to express his own meaning by speech or writing; it will be highly advantageous that he should express it clearly and vigorously. He must get effective command of at least one foreign language. He ought to know enough mathematics and drawing to make his own calculations and sketches. He ought to have learned how to use books. Spencer does not exclude literature and the fine arts from education, but in his scheme they are not to claim very much. "As they occupy the leisure part of life, so should they occupy the leisure part of education."

I do not suppose for a moment that this passage was written with the intention of pouring contempt upon literature, and it is really appropriate to the current fiction which to-day is, and to-morrow is cast into the oven, but what insensibility to the claims of the higher literature it betrays! "On traite volontiers d'inutile," says Fontenelle, "ce qu'on ne sait point; c'est une espèce de vengeance."[1]

[1] Dr. Duncan's "Life" furnishes proof of the slightness of Spencer's obligations to literature.

These considerations move me to reject Spencer's verdict. There is not, and cannot be, a scale of usefulness by which everybody's choice can be at once determined. Before deciding what the schoolboy is to study we must inquire what are his aptitudes, inclinations, and opportunities. And the importance of science, which I do not think Spencer has exaggerated, will be fully recognised when every nation and city, every profession and trade, every person and interest, can be guided as often as need arises, not by their own scientific judgment but by the judgment of scientific experts.

Everyone agrees, in the abstract, that scientific information, the heap of scientific facts, is a small matter in comparison with scientific method and the scientific spirit. We do not, it is true, give effect to our convictions in practice. The teacher of science still loads the memory with facts; the examiner in science still passes or ploughs according to the quantity of facts that the candidates have got up. It requires an effort to keep hopeful, but we must go on steadily pointing out what we take to be the right way. The reformers of science teaching are now bent upon such improvements as these: they wish to see a greatly improved synthesis of the student's knowledge, so that the things that he learns in one place and from one teacher should be intimately combined with what he learns in another place and from another teacher. Further, they wish to see a large extension of personal inquiry and personal verification of the fundamental scientific facts. It is thus, we think, that the future man of science will become possessed of a compact and harmonious body of useful knowledge, which may in favourable cases incorporate with itself the experience of after-life, and exhibit the incomparable virtue of healthy natural growth.

Technical Education.

Technical education may be pursued in at least three ways: (1) We may seek to qualify the pupil for his calling by a thorough training in some science or art, and then, by the application, under the guidance of an expert, of that science or art to a particular industry. The experience of at least two generations seems to show that this method is really effective; it does what it professes to do. (2) The second method aims at no more than supplying information directly applicable to the industry in question. Surely this is the least profitable of the three. The information is not accurately lodged, either in the memory or in the note-books of the students; it soon becomes obsolete in consequence of the advance of knowledge; and it does little to cultivate intelligence or the power of doing. Where intelligence and the power of doing already exist, mere information may be valuable, but the best storehouse of information is the printed book. (3) Lastly, we may aim at nothing more than facility by repetition. Such practical arts as reading, writing, drawing, needlework, and cookery are largely acquired by imitation and constant practice. Skill in these arts is a tool, the profitable application of which depends much upon the intelligence and enterprise of the possessor. Independent attempts to meet difficulties, friendly criticism of these attempts, questioning about the causes of failure, are the expedients which a wise and experienced teacher, ever at hand, would employ. Such a teacher is, of course, rarely to be had, but is now and then found in a sensible mother. Perhaps the best substitute for the sensible mother would be plain, practical lessons on elementary science, such as the Edgeworths, Dawes, and Henslow used to give.

Literature.

Literature differs from most kinds of useful knowledge in having an immediate value. Like beautiful scenery, health, liberty, friendship, and other felicities of life, it is good in itself, apart from the advantages which it brings. Nevertheless, literature is not satisfied with delighting. Like architecture, it aims at utility as well as beauty, and employs its power of delighting to instruct and guide.

The benefits which we receive from literature are comparable with those which we receive from good society. We are expected to enjoy and appreciate; we are not to be for ever asking: "What have I got that I can carry away?" Literature may be more than good society: it may compare with the intimate talk on grave subjects of a wise and high-minded friend. Unfortunately those whose office it is to introduce us to literature often treat it as if it were only a particular sort of useful knowledge. They occupy our attention so completely with grammar, metre, etymology, and historical allusions that we have no leisure to enjoy and appreciate. Dr. Bain [1] tells us that we need to be indoctrinated in points of style before we begin to read on our own account, and discourages the reading of entire plays of Shakespeare because we come across long passages which yield no marked examples of either grammar or rhetoric.

I have little fear that the scientific age which is now upon us will be permanently hurtful to literature. No new Lucretius, it may be, will write on the Universe, no new Milton on the Creation and the Fall. But contemplative and lyrical poetry will survive all changes in our philosophy. The higher criticism, which is the study of life as well as of letters, will survive too. One literary art, the art of rhetoric, may be weakened and lost when the scientific spirit becomes predominant—that sort of rhetoric, I mean, which may be fitly described as insincere eloquence. Rhetoric seeks above all to persuade, and in a completely scientific age men will only allow themselves to be persuaded by force of reason. Even in our imperfectly scientific age those men gain most by speech who have something important to say, who say no more than they know, and who use all possible plainness.

It will be enough for my present purpose if we can agree that literature has an aim and purpose of its own, and must not be treated simply as a branch of useful knowledge. Literature and science, for instance, are incommensurable.

The Necessity of Choosing.

It is an intellectual luxury to run over the kinds of useful knowledge that we should like to possess. Among them come languages, ancient and modern, some giving access to high literature, some yielding historical or scientific information, some acquainting us with communities or modes of thought very unlike our own. Then come a multitude of sciences, which perhaps show the engineer how to build railway bridges, or tell the navigator how to cross the Atlantic, or help us to improve our health and lengthen our lives. I barely mention history, geography, and innumerable practical arts. We seem to be led into a well-filled treasury, and invited to say what we will have. But one unpleasant condition is laid down: we may choose what we please, but we must pay for it. A new study generally means outlay of money, and always means outlay of time. We soon find ourselves forced to behave like the man whose wife has tempted him into a fine London shop; like him, we begin to ask: "How much can I afford to spend here?"

[1] "On Teaching English," p. 18.

Every headmaster and headmistress is occupied with the eternal question how to make room for all the things that are demanded of the school. Theorisers, who have no responsibility for the time-table, insist from time to time upon new additions, and are happy if they can only express their own opinions with an emphasis which satisfies their sense of justice. It is my opinion that far too much has already been conceded to demands which, reasonable when taken separately, are unreasonable when taken together. I have known the time-table of a girls' school overloaded to such a point that in one form chemistry and English literature got no more than an hour a week between them. The headmistress no doubt hated the arrangement, but had to conform.

I have said that the grounds for introducing each separate subject are often perfectly reasonable. Thus by ancient usage Latin is made a necessary subject in certain schools. Then a claim is put in for Greek as more interesting and equally important. French and German demand admission, and put forward claims which can hardly be overstated. The result is that some boys in secondary schools attempt four languages, and many attempt three. Then we usually find that no foreign language, ancient or modern, is mastered to the point at which it can be used in reading, writing, or conversation. Our wish to be fair and consistent has landed us in an absurdity. The root of the whole difficulty lies in the fact that while there are perhaps fifteen or twenty branches of knowledge eminently fit to be taught in school, no pupil can profitably undertake more than five or six at a time. I wish that the headmaster or headmistress might find courage and strength to require that every subject admitted to the curriculum should come round frequently, at least for two or three years; as nearly as may be once a day, but we cannot be rigid in these matters.

The sciences taught in school may spoil one another's chances in the same way. Not a few schools are convinced that they must have chemistry and physics because of their industrial importance, hygiene because of its relation to the health of the community, physiology to make the hygiene intelligible. The schoolboy is made to buy more sciences than he can pay for, and his time is gone before he reaps any of the advantages which are so much desired.

Too Much and too Long.

One inevitable result is that the school hours, including the preparation of lessons, are nearly always too long. Another result is that the schoolboy who is willing, but not very clever, is often overworked. I have known many such cases myself, and have also known cases in which excellent results have been attained in a good deal less than the customary time. If we could consent that our pupils should remain ignorant of many useful things, if we could materially shorten the lessons of very young pupils, and if we could bring the home lessons into much smaller compass, I believe that the education which we offer would really be more valuable.

Natural and Artificial Education.

If we had a pupil put into our hands for solitary instruction, like the Émile of Rousseau, we should find it wise to begin by studying him closely, and three things would particularly require attention—his aptitudes, his inclinations, his opportunities. The first two are self-explanatory, but the word *opportunities* may present some difficulties. It includes, of course, opportunity of learning, but the chief stress is to be laid upon opportunity of exercise in after-life. This is the opportunity which stimulates in-

terest and rewards exertion. Moral character, intellectual character, curiosity, love of knowledge, equipment for practical life, and, so far as I can see, all considerations which ought to govern the choice of a study, come under one or other of the three requisites—aptitude, inclination, opportunity.

In school we have not so much solitary pupils as groups of pupils to consider, and this compels us to accept compromises, which are familiar to every teacher. We have often to study the wants of a school form as well as the wants of an individual.

Some writers have given to the education which considers first of all aptitude, inclination, opportunity the name of *Natural Education*, while that which makes its choice of studies on abstract or arbitrary grounds, with little reference to the needs of the pupil, they call *Artificial Education*.[1] We may be allowed to revive these terms for the sake of brevity. To me they seem appropriate as well as convenient in practice.

The advocates of natural education have sometimes reached absurdity by pressing the claims of one of the three requisites to the neglect of the rest. Tolstoy would make inclination supreme, even in early education. He exemplifies Quick's remark that writers on the school course who are not schoolmasters are almost all revolutionary. Others have attended too exclusively to the opportunity of future exercise. The old grammar schools, thinking much of the future wants of the pupils who might wish to enter the Church, often added Hebrew to the compulsory Latin and Greek. Fortification was frequently taught to little boys. When the Berlin Realschule was founded (1747) it offered, among other things, instruction in the rearing of silkworms and the discrimination of ninety kinds of leather.

Nothing, I think, gives us a clearer notion of what natural education can accomplish in favourable circumstances than foreign travel, which is a form of self-education prescribed by grown-up people to themselves. Even the milder forms of compulsion are wanting here; aptitude, inclination, and opportunity are everything. The preparation, the actual journey, and the recollections yield abundance of instruction to those who use them well. For weeks before setting out the traveller will turn over maps and conversation-books, inquire about handy cameras or collecting-boxes, and study the country which he is about to visit with an eagerness which he never felt before. The journey itself, if only it be such a journey as an active mind will frame, cannot but call forth many powers, physical, intellectual, and moral, that are rarely exercised at home. The love of science, the love of languages, the love of scenery, the love of adventure, the love of society, the love of poetry, all get a new stimulus.

Let us suppose that all is done, not *by* the traveller, but *for* him, that routes are chosen, hotel bills paid, carriages and boats hired, languages interpreted, information supplied, all without effort on his part. In a few months he will barely remember what places he has seen and what he has passed by. This may remind us that natural education is only kept alive by *doing*.

Of course the grown-up person is not like a child, and there is need of steady and impartial government, of drill, in short, if the child is to take all the pains that are indispensably necessary in school work. All our teaching cannot be recreative. Does not this show, some of you will say, that your natural education is inadequate, and that a sterner thing, which takes little or no account of inclination, is demanded in school?

I think not. I think that inclination is a power that we ought to employ as often and as far as we can. No doubt it is inadequate; our very definition makes inclination only one of three requisites. The child at school may usefully remind us that the opportunity of future exercise in some cases becomes necessity, and will take no denial. Nevertheless, all three should be considered, and that teacher will prosper the best who lets none of them drop out of sight. Do not forget, too, that inclination is the modifiable requisite; we can stimulate, and even create it; we can also fatally discourage it. It is only natural education, I still maintain, which can count upon the energetic co-operation of the child.

On the other hand, if we ignore aptitude, inclination, and opportunity—if we pour out information upon which the pupil does no work, merely because we think it ought to be good for him, then we have a dull, perhaps a sullen, mind to deal with, which neither will nor can learn to good purpose. The example for all time of artificial education is, or lately was, the setting of every boy in every grammar school to learn Latin, if not Latin and Greek.

Those who believe that natural education is at once the most formative and the most productive, that it helps to build up body and mind, that it encourages the acquisition of truly useful knowledge, should attend to one point which often escapes notice. Natural education demands leisure for the pupil. At the present moment the leisure of the pupil has been reduced to a very small amount indeed. We strive for efficiency, for good examination results, for knowledge of useful things. The negligence of the old race of schoolmasters, which winked at monstrous abuses but allowed a certain independent school life, has been replaced by zeal and conscientiousness, which occupy every hour, and sometimes treat independent occupations as mere idleness. Long rambles, such as were the delight of my boyhood, when we used to go miles in search of a wasp's nest, are in certain modern schools abolished by compulsory games. Some day or other (the reform will not come in my time) we shall recognise that the chief occupation of the young child should be spontaneous natural play.

Heuristic Methods.

Dr. Armstrong's heuristic method is well known in this section. He tells us that neither the name nor the thing is altogether new, and the same may be said of nearly every educational expedient. Promising schemes are proposed, tried perhaps on a small scale, and dropped, often for lack of enterprise on the part of the teachers, and years after someone discovers them again. Dr. Armstrong tells us[1] where he got the name, and quotes a passage from Edmund Burke, which clearly describes the method.

The method need not be confined to experimental science, nor to science at all. I have attempted something of the same kind in elementary biology. Why should not teachers of history carry out a little historical research with the help of an upper form? The historical researches of the school may give opportunity for the use of foreign languages, for map-drawing, or for the handling of statistical information.

Mastery of Something.

Let us indulge less than we do the passion of intellectual avarice, if only because avarice blinds us to the relative values of things. The old French anatomist, Méry, said of himself and his colleagues that they were like the rag-

[1] See, for example, Henry Sidgwick in "Essays on a Liberal Education" (1887).

[1] 'The Teaching of Scientific Method," &c. (Macmillan, 1903), p. 235.

pickers of Paris, who knew every street and alley, but had no notion of what went on in the houses. The accumulation of miscellaneous knowledge of useful things, copious, inexact, inapplicable, may, like rag-picking, leave us ignorant of the world in which we live. Let us try to reach the inner life of something, great or small. The truly useful knowledge is mastery. Mastery does not come by listening while somebody explains; it is the reward of effort. Effort, again, is inspired by interest and sense of duty. Interest alone may tire too quickly; sense of duty alone may grow formal and unintelligent. Mastery comes by attending long to a particular thing—by inquiring, by looking hard at things, by handling and doing, by contriving and trying, by forming good habits of work, and especially the habit of distinguishing between the things that signify and those that do not.

It is too much to expect that mastery will often be attained in school. School is but a preparation, not, I think, for promiscuous learning, but for the business of life. The school will have done its part if in favourable cases it has set a pattern which will afterwards develop itself naturally and harmoniously.

THE SEQUENCE OF STUDIES IN THE SCIENCE SECTION OF THE CURRICULUM.[1]

An inquiry has been conducted into the actual practice adopted and the ideal plan of studies advocated by science masters in selected public schools of various types, and the committee thank the science masters and inspectors who have helped by full, concise, and clear replies to the questions sent to them.

The following extract from the circular letter will show the scope of the inquiry: "The sub-committee charged to make inquiries about the best sequence of scientific studies in boys' secondary schools (which for purposes of this inquiry may be taken to mean schools other than public elementary or technical institutions) recognise that the actual order in which science subjects are taught depends upon a variety of circumstances. Such are the type of school, local conditions, the future career of pupils, external examinations, and the personal preferences and qualifications of teachers.

"But we suspect that there is a natural order of treatment which is indicated by the mutual interdependence of the subjects, and to an even more important degree by the brain-development of the pupil. We anticipate that from the replies of experienced teachers, inspectors, and examiners we shall obtain trustworthy information on this question.

"It seems of importance to specify the average age of the class in which the work has been done; to describe the method of teaching, giving an indication of the relative importance (*a*) of lectures, tutorial work, laboratory work, and (*b*) of text-books used by the boys, dictated notes, notes composed by the boys. For convenience we adopt the terms 'subject-method' and 'problem-method' as defined in question 6."

Questions Relating to the Sequence of Studies in the Science Section of the Curriculum of Boys' Schools.

1. (*a*) Name and address; (*b*) school; (*c*) type of school and approximate leaving age.

2. Give a list of science subjects studied at your school in the order in which they are taken, bracketing those begun simultaneously, with the approximate average ages of the classes.

3. Indicate the range of the above work, and add remarks on method. It may be useful to give the names of text-books used (if any) and the extent of the books covered. The terms *problem-method, tutorial, or lecture and laboratory*, will help to indicate the style of teaching. Refer also to local conditions and personal preference of teacher where these have determined the choice of subjects.

4. At what stage or age can text-books proper—as distinguished from laboratory guides—be introduced with success, and be used jointly with lectures or instead of them?

5. If free to teach any science subjects in any order (within limits of not less than two nor more than six hours per week), what order would you select? Please insert in brackets after each subject the range of age. It may be useful to draw arrows to indicate cases in which one subject leads to another.

6. (*a*) Please state your experience of teaching classes of from twenty to thirty boys by *methods other than* the usual "subject-method," which treats mechanics, heat, chemistry, botany, &c., as different *subjects*. Give the extent of your experience and estimate the results obtained.

(*b*) From your general experience of science-teaching, would you prefer, in classes of from twenty to thirty boys, to use the *subject-method* or the *problem-method*? By the latter is understood the treatment of particular problems by utilising the methods of mathematics, chemistry, geology, or other "subjects" at will.

7. Add further remarks based on experience.

Results of Inquiry.[1]

I. *Status of Persons and Institutions sending Replies.*—The distribution of these circulars was purposely limited. Of the schools replying, twenty-five may be described as secondary schools of the type receiving grants from the Board of Education, and twenty-two as "public schools." Several inspectors sent replies containing criticism of special value.

II. *On Existing Curricula.*—There is general agreement among the curricula reported. We quote reply (2) as typical of schools with leaving age 15 to 16, and reply (43) as typical of schools with leaving age 18 to 19. The former we designate Group A and the latter Group B.

School No. 2 (Group A). Ages 12–13.—Physical object-lessons—measurements, densities, thermometry, centre of gravity, moments.

Ages 13–14.—Calorimetry, Boyle's law, triangle of forces; chemistry of air, water, chalk, carbon.

Ages 14–15.—Expansion, vapour density; salt, chlorine, sulphur.

Ages 15–16.—Ammonia, oxides of nitrogen, metals; light, electricity, organic chemistry.

School No. 43 (Group B). Ages 11–15.—Astronomy, physiography, or botany.

Ages 14–15.—Practical mensuration; elementary practical chemistry.

Age 15.—Hydrostatics, heat; chemistry of air and water.

Ages 16–19.—Mechanics, heat, light, electricity and magnetism; inorganic chemistry; elements of chemical theory and of organic chemistry.

Owing to the close agreement of the curricula, the

[1] From the report of a sub-committee—consisting of Prof. R. A. Gregory (chairman), Messrs. W. D. Eggar, O. H. Latter, Hugh Richardson, C. M. Stuart, and G. F. Daniell (secretary)—of the British Association Committee on the Curricula of Secondary Schools.

[1] The Roman numerals correspond with the numbers of the questions above.

following tables fairly represent the actual sequence of subjects in the majority of schools:

TABLE A.—*Usual science subjects in schools where the leaving age is sixteen.*

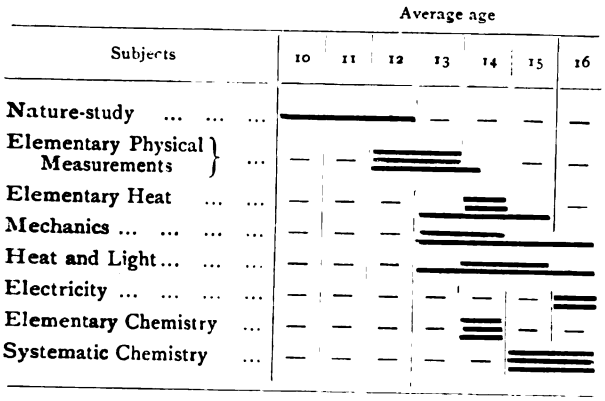
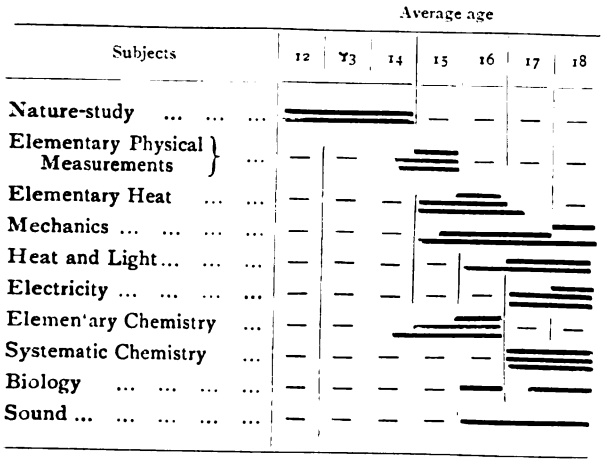
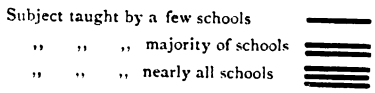


TABLE B.—*Usual science subjects in schools where the leaving age is eighteen.*





Nature-study appears in a minority of Group A and a majority of Group B, and always precedes mensuration, &c. Outdoor and observational studies have made progress since the Nature Study Exhibition of 1902. The work is practical and seasonal. In many schools boys so inclined continue in their leisure hours to work in connection with natural history clubs; otherwise these studies cease somewhat abruptly at age thirteen or fourteen, and seldom lead to the later study of biology.

Elementary Physical Measurements.—By this title we understand such a course as that now contained in the earlier parts of most school-laboratory manuals of physics. Such a course is practically universal; its adoption is supported by the Headmasters' Association, and recognised by examining bodies. The age at which this and other subjects are studied is in accordance with the entrance and leaving ages. Boys of fourteen presumably enter Group B schools without having done the work which is taken from age twelve to fourteen in Group A. In a few cases the elementary practical physics is correlated with mathematics; in many cases the absence of such correlation is deplored.

Elementary Heat.—This subject is universally taught, and may be considered a necessary preliminary or accompaniment to elementary chemistry.

Systematic Physics.—The branches are usually taken in the order mechanics, heat, light, electricity. In a few cases mechanics is dropped for a time after the conclusion of the mensuration course, and begun again on a higher plane with the aid of mathematical equipment at age seventeen. In some Group A schools electricity is introduced early, as otherwise the majority of boys leave entirely ignorant of a subject the applications of which will meet them in everyday life. Sound is usually omitted; when introduced it appears late, and is perhaps retained for examination purposes.

Systematic chemistry, with few exceptions, is studied for the last two years.

Biology.—In Group A schools biology only appears as a class-subject in connection with agriculture. Interesting experiments in rural education are being made, and botany is prominent in the programme; otherwise the absence of botanical teaching in boys' schools is markedly in contrast with the practice in schools for girls. In a few cases lessons in physiology are given at age fifteen-sixteen. As a rule, biology is taught only to boys intended for the medical profession, and is a post-matriculation subject.

Physiography, Geography, and Geology.—We do not include these in our tables, as they do not appear to be among the responsibilities of the scientific staff at present. In a few instances mention is made of them, and some attempts to synthetise a boy's scientific knowledge through the medium of geography are discoverable.

The science work of the classical side of higher secondary schools (Group B) is not sufficiently stated in the replies, the majority of science masters confining their statement of curriculum to the work done in the divisions wherein science is an important branch of the instruction. From statistics presented by Mr. R. E. Thwaites to the Leicester meeting of Section L in 1907, it appears that in secondary day schools all boys more than twelve take science, and in twenty-nine public schools less than 60 per cent. of the boys take the general science course of four hours a week. Some of our correspondents state that science on the classical side is very weak; there is no favourable report in this connection.

III. Replies to Questions 3 and 6 are considered together; see VI.

IV. *On the Use of Text-books.*—The reports received are clear and emphatic that text-books are not used, and ought not to be used, in the youngest classes. They are equally clear that text-books are used in the higher classes. At age nearly sixteen, or in Forms V. and VI., or in the last year before an examination, text-books are usefully introduced. The reasons given for using text-books are various—for reference, for preparation, for specialists, for examinees, for revision, for boys who have been absent. Up to fifteen, success appears to depend on carefully prepared lessons, followed by a self-reliant attempt to write a plain, accurate account of what has been done. Text-books when first introduced are employed to supplement the tutorial work, and only at a much later stage, depending on the intelligence of the boys, can a book be employed instead of a lecture—*i.e.*, for the acquisition of facts or apprehension of a course of reasoning. Fairly intelligent boys about fifteen years old, who have been learning science for two years, can use text-books for home work, but not as a substitute for lectures. Many boys appear to have very little power of reading for themselves, but that is perhaps a reason for encouraging them to try. Text-

books seem useful in physics rather sooner than in chemistry. There is a loss of keenness on the part of the boys who can find the result of an experiment in the book before they perform it. The use of laboratory guides seems to depend on the preference of the teacher rather than on the intelligence of the boys. Where clear oral directions are given, and all the boys are doing the same experiment, no text-book is required on the laboratory bench. On the other hand, if each boy works at his own pace through a definite course of experiments, some such arrangement is necessary in order to give assistance. Whether the boys shall all do the same experiment at once or work independently is perhaps determined by other circumstances. If the apparatus is limited, the class small, the master not over-busy and helped by a demonstrator, individual teaching is possible with boys who can make some use of books. On the other hand, in large classes, with plenty of apparatus but no demonstrator, the master perhaps relies on very thorough teaching in the lecture-room, the class all do the same practical work, and no text-book is required.

V. *On the Ideal Curricula in the Opinion of the Correspondents.*—The majority regard the existing curricula as satisfactory, requiring few changes to realise their ideals. The improvements most frequently desiderated are (1) the teaching of mensuration and elementary physical measurements as part of mathematics; (2) inclusion of nature-study where this is not already done. A few ask for the introduction of more biology and of geology, the latter as part of geography. In many schools—probably the great majority—the science master has had a free hand to arrange the curriculum, subject to the demand that some success in external examinations will be achieved. Some public-school science masters complain that preparatory schools do not lay any foundation for the science work of the public school.

VI. and III. *On Present Methods of Teaching.*—Laboratory work is universal, and the importance of boy-made notes is mentioned frequently. In the larger schools a high value is set upon written answers to questions (*a*) set before experimental work in order to focus the ideas of the class upon its purpose; (*b*) set afterwards in order to test grasp of principles. The method of instruction is tutorial, supplemented by what may be described rather as "lecture-demonstrations" than as "lectures." Whereas teachers feel satisfied (as a rule) with their choice of *studies*, many complain of the influence of external examinations on the *methods* of teaching, particularly as hindering, or actually preventing, the adoption of heuristic methods. There is so great a variety of opinion with regard to the value of heuristic methods that we are unable to summarise the replies with justice. We consider that opinion inclines to the adoption of the "problem-method" in the earlier stages and to the "subject-method" in the more advanced classes. Almost everyone appears to have tried the heuristic method of teaching, particularly in connection with the chemical side of problems in the laboratory. In the case of nature-study the problem-method dominates the teaching and stimulates boys during the years for which the study is prescribed.

There appears to be agreement as to the desirability of emphasising the interdependence of chemistry and other subjects. "Physical science is one; your teaching must bring this into prominence."

VII. *On Special Difficulties to which Reference is made in the Replies under "Further Remarks."*—Several masters complain of the insufficient mathematical equipment of pupils, and of the need of co-operation between mathematical and science masters. Promotions are a source of difficulty owing to their frequency and to the fact that they are often made with entire disregard of the science work. As a consequence, boys in the same set differ much in their ability and knowledge of science. One correspondent protests against the abandonment of qualitative analysis, which in his opinion is of much value, provided boys are made to think. Another states that universities do little to teach methods of teaching science. From the science masters of a few schools comes the complaint that they are under a classical tradition of overwhelming power, and that their colleagues disparage science. We are happy to say that there are other schools where broader views are found compatible with unsurpassed achievements in the classical languages. The injurious influence of external examinations, particularly in the early part of the course, is a frequent source of complaint.

Opinions and Recommendations of the Sub-Committee.

The following conclusions may be drawn from the results of this inquiry:

(1) The organisation of the studies of chemistry and physics, and especially their correlation, shows marked improvement, both in secondary day schools and in the "sides" of those large public schools in which the science work is regarded as an important part of the general intellectual training.

(2) The attention universally given to laboratory practice and to the development in the boys of the powers of *doing* and *describing* deserves nothing but praise. The considerable degree of freedom given to teachers has clearly encouraged independent experiment and thoughtful criticism as regards their work. The resulting variety and elasticity in their methods is, in our judgment, a good feature which we wish to preserve. As indicated below, we desire to give greater freedom to teachers by modification of the influence of examinations.

(3) We are in sympathy with the endeavour of the Public Schools Science Masters' Association to overcome the neglect of science in preparatory schools. The boys should be made to feel from the first that the study of science is an essential part of their education. Both in the preparatory departments of day schools and in preparatory schools some mensuration should be included as part of the mathematical work. But an essential part of the preparatory course in science should be natural history (including some physical geography) and the rudiments of physics; the real value of these studies depends upon training in observation.

(4) No school course can be considered complete without at least two years' systematic practical work in science. We direct the careful attention of headmasters as well as science masters to the problem of how, without overpressure, to make the study of science an intellectually fruitful and stimulating part of the work in higher secondary schools of those boys whose special gifts are linguistic or literary.

We think that the value of sound scientific literature of a general character and of good lectures, well illustrated, for older and intellectual boys is underrated. Evolution, geology, electricity, optics, sound, human physiology, and astronomy seem suitable subjects. The feeling that there has been of late years a loss of popular interest in science is shared by this committee, who feel that we must look to the schools to improve matters. While fully recognising the importance of quantitative methods, we feel that qualitative work also deserves encouragement and respect. We wish to avoid producing the student described by Prof.

J. J. Thomson (Section A, Liverpool, 1896) in the words, "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."

(5) We are struck with the unanimity shown by our correspondents concerning the influence of external examinations upon the teaching of science. This influence is found to be harmful. The harm is produced partly by having to work along the lines of too rigid a syllabus, but chiefly from the fact that science is intended to teach *principles*, while the examination asks for *details*. A boy may have derived the full benefit from a course of science lessons without remembering the experiments therein; for the examination, however, he has not to repeat these experiments; he has to memorise them, and to study how to reproduce what he remembers in the approved examination style. Anything further from true scientific method could not possibly be conceived.

It has been suggested that the written and practical examination should be replaced by, or include, an oral examination based upon the candidate's own work as shown in his note-books, leading on to its application to other problems, and the plan is worth trying; it is hoped that some examining bodies may be induced to make some experiments in this direction.

Working on the lines of a prescribed syllabus limits the teacher's initiative and discourages research methods. The syllabus in nearly all cases prescribes too much for the majority of schools, and, therefore, too much is attempted in the schools. This prevents sufficient attention to the scientific method of inquiry. There are many branches of science, but one scientific method. This consists in obtaining facts and ideas by experiment or observation, classifying and comparing them, and discovering a formula or principle to express them. All the school work in science should be imbued with the aim of cultivating an appreciation of and familiarity with scientific method. Examinations will continue to impede this aim in so far as the school work is forced to conform to the examination rather than *vice versa*.

(6) We desire a more extended recognition of geography as a science subject, in association with elementary geology. Rightly taught by means of exercises both in and out of school, geography is capable of providing a training in scientific method, of inspiring interest in natural phenomena, and of co-ordinating work in many branches of science.

(7) We are of opinion that more attention may wisely be given to the claims of biology in upper forms.

(8) We note with satisfaction that the necessary correlation is observed as regards chemistry and physics. We find that there is too little correlation of (*a*) mathematics with physics, (*b*) chemistry with English composition, (*c*) nature-study with art, (*d*) physics with workshop instruction, (*e*) geography with all other branches, especially meteorology and nature-study.

The need for more correlation of mathematics and physics implies the need for more co-operation between teachers of those subjects. We believe that the classification into mathematical sets might be accepted by the science masters as the classification for science sets also. It should be pointed out that much of the work which has been done in the physical laboratory can advantageously be transferred to the mathematical classes. Mensuration, including the greater part of the work frequently described as elementary physical measurements, should be part of the mathematical teaching. The work in the physical laboratory should, even at the beginning, be of a truly experimental character.

(9) We are impressed with the need of bringing all science work into closer touch with everyday experience (see Prof. Miers's Address to the Public Schools Science Masters' Association, January, 1908, published in an abridged form in THE SCHOOL WORLD, March, 1908).

(10) There is a need of inspiring and well-written books on scientific works and achievements. It is unwise to limit a boy's ideas in science to the narrow experience he can gain in a laboratory or can hear in a class-room; such a course must in many cases lead to distaste for science. On the other hand, we question the value of the stream of elementary text-books continually poured forth. What is wanted is a scholarly literature of science.

(11) There are too few laboratory assistants in secondary schools of all types—a most wasteful "economy."

THE TRAINING OF STUDENT-TEACHERS.

IN a recent circular[1] the Board of Education directs attention to the future training of those bursars who, instead of proceeding direct to training colleges, will in the first instance be employed as student-teachers in selected elementary schools. The Board points out that the whole student-teacher system is an experimental one, and that, while the Board is prepared to leave discretion to authorities as regards the nature of the schemes which they now frame for student-teachers, it reserves the liberty of withdrawing approval or of pressing for modifications in approved schemes, should experience render this desirable, at a later date.

A student-teacher scheme submitted for the approval of the Board must include a list of the elementary schools in which it is proposed that student-teachers shall be placed. As far as possible those schools should be selected which are sufficiently well staffed to leave the head teacher with adequate leisure for supervision. Moreover, the teaching must reach a high standard in order that the student-teacher may not be misled by observing indifferent or conventional methods; and in order that the student-teacher may practise under tolerable conditions, the classes should be of a reasonable size and taught in rooms in which quiet can be obtained and can be kept under effective supervision. It is important that the classes should not be too large, in order that the beginner may not find himself overwhelmed or led astray by the mechanical difficulties attending the management of more than some thirty or forty children.

It is important that the supervision of student-teachers should not be left wholly to the head teachers under whom they are placed. The Board considers that every authority responsible for the operation of a scheme should appoint some definite person to have the control and care of student-teachers, and to see that provision is made for their training and education, and that proper records are kept both by the student-teachers and by the head teachers. As a rule, some one person should have the general superintendence; and this person should combine experience of practical teaching with high ideals as to the functions and responsibilities of the teacher's calling, and as to the professional aptitudes and liberal cultivation which it requires.

The period of student-teachership should be regarded as one of preparation for the work of the training college, and should be devoted to obtaining a knowledge by prac-

[1] No. 597.

tice under proper supervision of the procedure followed in elementary schools, with the view of studying later the principles underlying that procedure. The student-teacher obtains an opportunity of becoming familiar with the conditions of work in elementary schools, and with some of the difficulties which he will have to solve. He will obtain some acquaintance with the routine of a public elementary school, including the simpler regulations of the Code and the expedients employed for the smooth working and punctual and orderly conduct of a good school, and of some of the conditions affecting the health and general well-being of the scholars; and he will be brought into contact with young children and will gain some knowledge of their dispositions and capacities. In order to ensure this, the student-teacher should not merely be occupied in watching others teaching, but should himself make some definite and continuous attempt at teaching. He will begin to have an idea of the right limitations of the teacher's activity and to appreciate how far more important is the intellectual activity of the class and of each child in the class.

Both for the sake of the student-teachers and of the children, except in schools specially organised with the view of providing them with direction and guidance, they should be introduced to the work of teaching by gentle degrees only and at a period when they have already begun to recover from the strangeness of their surroundings. Responsibility should only be undertaken with knowledge, and knowledge can only be secured as a result of earlier essays under expert guidance. It will probably be best that, except in such specially organised schools, no attempt should be made to put student-teachers in charge of classes or to entrust them with regular teaching in any subject, until they have been long enough in the school to see how teachers of experience handle their work. It must, however, always be borne in mind that student-teachers are present in the school for their own edification, and not to lighten the duties of the ordinary staff; and care must be taken to ensure that they are not often employed in duties which are of the nature neither of observation nor of practice. Towards the end of the year the importance of their duties may be somewhat increased, and they may perhaps be made continuously responsible to the head teacher, at any rate in certain subjects, for a small class or a section of a larger class. The practice of observation should not at any time be neglected entirely, and it will be helpful if visits are paid from time to time to other schools in order that the variety of conditions under which schools are conducted may be realised.

Careful registers must be kept by the head teachers showing the way in which the time of the student-teachers is employed and containing records of their progress. It may also be well that each student-teacher should keep a brief diary of his work, and, at any rate during the latter part of his year, notes of the more important points which are brought to his attention in observing other teachers or in discussion with them. Towards the end of his student-teachership he should prepare careful notes of one or more short courses of lessons to be given by himself in the presence of his head teacher. These the head teacher should subsequently discuss with him; but frequent criticism lessons of an elaborate character should be avoided, and it is unnecessary that the time and attention of the student-teacher should be taken up with too much keeping of records or with preparing formal notes of all instruction entrusted to him.

If it is borne in mind that the student-teacher period is one of preparation for the training college, it will be apparent that the student-teacher should not be expected to study books or attend lectures upon the principles of teaching, or upon method, or upon the psychology of the child mind, or upon school management or the like. A knowledge of procedure is best acquired by practice under proper supervision, and the study of the principles of pedagogy may with advantage be postponed until the training-college stage, when the student has already become familiar with the conditions under which the principles have to be applied. The student-teacher may well read books, such as the lives of great teachers, which bear indirectly upon teaching. The manual arts which belong to professional study might be undertaken. A few systematic lessons in voice-economy and in physical exercises may also be of service at this stage.

It is extremely desirable that what general study the student-teacher undertakes at this period should be undertaken for its own sake and not with a view to his next step on the ladder of examinations. Probably the best course would be for him to drop most of his school subjects and to read by himself at whatever subject interests him most, with such guidance as he can obtain by weekly visits to his former secondary school. A good course of University Extension lectures would also come in appropriately at this stage as a means of widening the general outlook.

HISTORY AND CURRENT EVENTS.

If it is true that

> "East is East, and West is West,
> And never the two shall meet,"

what is the meaning of the news that has come to us during this year? Half-Asiatic Russia seems to be succeeding with her third Parliamentary experiment. Persia is in civil war between the Shah and his Parliament. India is restless, and wants more opportunity to express her views. Turkey is regenerated, as it were, in a moment. Jews, Christians, and Moslems have fraternised in Jerusalem, and there is to be a Parliament for the welter of nations that were, under the Ottoman failure to rule, cutting one another's throats. Even China, slow-moving as ever, has proclaimed a "Constitution." Japan we have admitted to the comity of nations. Europe has been, consciously or unconsciously, with Christian missions and with eagerness for trade, teaching Asia now for more than a century. Should we be surprised at results?

What it will all come to no one can tell. What it means, even, is by no means clear as yet. But they all want Parliaments. Have Parliaments, then, been such a success in the West that they can be regarded as the panacea for all the ills that flesh is heir to? To take only such events as have happened among ourselves recently. We have a Unionist member of Parliament telling his constituents that he cannot oppose the present Ministry because his political friends are opposing the Licensing Bill. So apparently his Unionism and other political principles must suffer, because he must be on one side or the other. More serious still is Prof. Dicey's question, "What are the guarantees against oppression which are provided by the (British) Constitution?" He finds them in "sound public opinion and the suspensive veto of the House of Lords"; while Prof. Flinders Petrie would like to recreate the Estates of Edward I.'s time.

When the nations of Europe were wanting constitutions in the first half of the nineteenth century, they demanded,

besides Parliaments, "freedom of the Press," meaning more especially the political newspaper Press, a freedom which in England we have had for much longer time than they. What, then, does the president of the Institute of Journalists think of the "fourth Estate," an institution which Asia also wishes to have in these days? He thinks its influence is less than it was forty years ago, because now "there is more appeal to the immediate and less thought of the abiding, greater glare and less illumination, the generation of heat rather than of light, the sacrifice in too many cases of common sense to crude sensationalism, of the honest truth to the telling headline."

BUT, with however mistaken ideas as to what is best, Asia is certainly beginning to awake. All the States that border on the Pacific and Indian Oceans, Canada, the United States, Australia, and south-east Africa know this already, and in Russia "the impression is beginning to crystallise that European rivalries are inconsistent with the awakening of the Asiatic nations." If the battle of Armageddon of the near future is to be between Asia and Europe, Europe must close her ranks. What, then, are the hopes for European peace? The Universal Peace Congress has been sitting this summer, and its members have heard strange views. The Bishop of Perth (Western Australia) told them that "a policy of universal military service . . . was not in opposition to the principles of peace." Mr. Lloyd George said "there was a nobler crusade [than those of the Middle Ages] awaiting the princes and people to-day. Let them lay aside suspicion, mistrust, quarrels, feuds, and they might redeem humanity from the quagmire." But he denies that he attacked the "Two-Power standard."

ITEMS OF INTEREST.

GENERAL.

Two features of special interest in the programme of the general meeting of the Classical Association, which is to be held in Birmingham on October 8th to 10th are the address of the president, Mr. Asquith, and a performance of the *Hippolytus* of Euripides in Dr. Gilbert Murray's English translation by Miss Horniman's company, with incidental music by Mr. Granville Bantock. Papers will also be read by Prof. Mackail on "How Homer came into Hellas," and by Prof. Sonnenschein on "The Unity of the Latin Subjunctive." The Greek Pronunciation Committee will present its final report, and the Curricula Committee an interim report. The latter is of general interest and importance, emanating as it does from a body of men who may be considered as representative of classical education in English universities and schools of various types. The first part of the report deals with the question raised at the Cambridge meeting last year, whether a short course of Latin, such as finds place in schools not mainly classical, is of sufficient educational value to justify its retention. The second part of the report discusses the report of the Curriculum Committee of the British Association (1907), which it welcomes as recognising the value of literary studies in the school curriculum.

THE autumn meetings of the Association of Assistant-masters in Secondary Schools were held at the Mathematical School, Rochester, on September 9th and 10th. At the general meeting the chairman, Mr. R. F. Cholmeley, St. Paul's School, gave an address on the work of the association during the last six months, in which he emphasised particularly the successful result of the efforts made by the association for years past, and especially in connection with the Richmond School case, to obtain a satisfactory settlement of the question of the tenure of assistant-masters in endowed schools. He congratulated the association on the passing of the Endowed Schools (Masters) Act. Resolutions of thanks to the Government and the Association of Headmasters for their action in connection with this question were adopted. The following resolutions were passed dealing with the regulations for secondary schools, 1908, and the new regulations for the training of secondary-school teachers: (i) That this association warmly welcomes the statement of the Board of Education that the increased grants now offered to secondary schools are intended not to give relief to local rates, but to increase the efficiency of the schools, by providing the means whereby better qualified and better paid teachers may be secured (ii) That this association views with satisfaction the continuation of the Board's policy of giving increased freedom to schools in the arrangement of their own curricula. (iii) That in the opinion of this association the requirement of the Board of Education that the functions of the governing bodies of schools shall be defined adequately in a written document will be to the advantage of everyone concerned in the work of secondary education. (iv) That this association welcomes the encouragement given to the professional training of secondary-school teachers by the system of grants in aid of courses of training lately initiated by the Board of Education; but hopes that the Board will grant similar aid for the training of secondary-school teachers in such secondary schools as may be recognised specially for that purpose. Mr. C. Bird read a paper on the financial position of assistant-masters, and a discussion followed. A discussion on leaving certificates was opened by Mr. Whitehead, honorary secretary of the association.

THE Board of Education has issued a supplementary circular[1] defining with more particularity the position of the "school medical officer" in relation to public elementary schools, and amplifying the details already sketched in recent memoranda as regards the provision to be made for the medical inspection of school children under the Code of 1908, the scope and character of the annual report on medical inspection which each local education authority must submit to the Board, and the arrangements which should and may be carried out by the local authority for attending to the health and physical condition of school children. With the object of placing the responsibility for dealing with the medical aspects of elementary education in the hands of a single officer, responsible to the local education authority of each area, the term school medical officer now replaces the vaguer expression "medical authority" which was used in the Code of 1907. At the same time, his functions are extended, and his status receives official recognition as that of the one individual charged with the organisation and control of the whole machinery of the school medical service, and responsible to his local authority for the acts of all persons taking part in that work under his direction. In the great majority of cases, subordinate officers will have to be appointed as his assistants. Separate school medical officers for separate parts of one educational area will be recognised in exceptional cases only. Arrangements must be made for securing close co-operation between the sanitary authority and its officers and the school medical officer—a matter of urgent importance, for

[1] Board of Education, Circular 596. Supplementary to Circulars 576 and 582. (Eyre and Spottiswoode, Ltd.) 1*d*.

instance, in cases such as that in which the exclusion of individual children or the closure of the school comes up for consideration, besides others in which the interests of education and the claims of sanitation do not always appear to run on parallel lines.

Considerable latitude is allowed to the local authority in formulating its scheme for carrying out medical inspection; each scheme submitted will be considered "broadly and on its merits." It is intended that the annual report made by each school medical officer to his education authority shall be of a very comprehensive character. These reports are ultimately intended for the information of the Board of Education, to which body two copies of each must be forwarded by the local authority; and they "may well include statements of local circumstances and conditions which would be superfluous if intended only for the information of the local authority." The sanitary condition and the hygienic needs of schools, scholars, and of the latter's homes are to receive full attention. School nurses may be appointed with advantage. In suitable cases the local authority will be permitted to supply spectacles to children suffering from defective eyesight free of charge; to make special contributions to hospitals, infirmaries, and dispensaries; or, again, to establish school clinics for the adequate investigation (and in exceptional cases for the treatment) of abnormalities and disease. The circular throws into full relief the vast area covered by the term "education" in its modern sense—an area which, as we have come at last to realise, is co-extensive with all the activities, mental, physical, and moral, of the child's existence. It is also, in its way, epoch-making in the official recognition which it establishes for the school medical officer as exercising functions no longer regarded as merely preventive or corrective, but as representing a guiding and controlling force in evolving a system of national training.

The Board of Education is this year publishing the statistics of public education in two volumes. The first has been issued (Cd. 4288), and deals wholly with educational statistics, the financial particulars being reserved for the second part, which is to be published later. The available volume is brimful of interesting data, and two or three items only can be referred to here. During 1906–7 there were in England 676 secondary schools receiving grants from the Board, an increase of 76 on the preceding year. In these schools 62,712 boys and 50,877 girls were educated, the numbers for 1905–6 being respectively 60,353 and 44,681. The 62,712 boys were distributed as follows: 18,214 were in forms below those taking an approved course of work, 42,505 were taking an approved course, and 1,993 were in forms above those taking an approved course. The corresponding numbers for girls were 13,993, 34,201, 2,683. So far as elementary education was concerned, it appears that on August 1st, 1907, 19,186 elementary schools of various kinds were recognised by the Board, and these provided accommodation for 6,605,591 children. The number of pupils of various ages on the school registers on the last day of the school year was 5,573,553, a decrease of 22,584 on the preceding year. The number of certificated teachers in ordinary elementary schools on the same day was 84,026, the number uncertificated was 36,535, and there were 44,615 "other" teachers.

The responsibilities of education authorities with regard to mentally defective children are among the matters dealt with in the report, recently published, of the Royal Commission on the Care and Control of the Feeble-minded. The Elementary Education (Defective and Epileptic Children) Act, 1899, is a permissive Act, under which education authorities are empowered, but not required, to make provision for an intermediate class of defective children, being neither imbeciles on one hand, nor merely "dull and backward" on the other. Up to September 30th, 1906, the Act had been adopted by eighty-seven local education authorities; but the schools have been established wholly in urban centres, and usually where there is a large industrial population and a high assessable value. The statistics show that, taking England and Wales as a whole, the schools are few in number and very unevenly distributed. On August 1st, 1907, accommodation had been provided for 9,082 children in all, of whom 4,946 were in London. As a result of the medical investigations, the Commissioners conclude that 0·59 per cent. of the total number of children on the school registers, or, in other words, some 35,662 children, are in need of more suitable provision than is at present existing. The Commissioners do not propose that the Act of 1899 should be made compulsory, but express the belief that by itself, and without many modifications and changes in other directions, the Act cannot meet the demands of the mentally defective. This view is held to be quite consistent with the opinion that a special class of some kind for the observation and training of mentally defective children should be associated with other means of dealing with the mentally defective as part of a common system.

The proposal that the education authority should be the authority in charge of mentally defective children is rejected by the Commissioners, who remark: "The educational system of the country, established for the teaching of the normal child, is, in our opinion, unsuitable for the child who, unlike the blind and the deaf, can never reach the mental level of the normal. Also it is evident that the development of the institutional and other arrangements required for this class would lead education into a department of work largely foreign to it. It is only by taking care of children, who are mentally defective in various ways and degrees, as part of a common problem, that it becomes possible to provide for them systematically or adequately either during childhood or later. On these grounds it seemed to us indispensable that a new authority should be established for the care and control of this class, and that it should be responsible both for children and for adults."

The last quarterly report of the Education Committee of the Leicestershire County Council includes a scheme for the training and general education of student-teachers. The training of the student-teacher in the elementary school is to be under the general supervision of the director of education, who will arrange with head teachers the schemes of practice necessary to satisfy the Board of Education, examine the records of such training, and report to the education committee. The student-teacher will be expected to attend lessons to children given by the head or other certificated teacher in the elementary school to which he is attached, prepare notes of lessons, deliver lessons for criticism, learn to illustrate lessons by blackboard sketches and simple apparatus, and to prepare syllabuses of work. Facilities are to be provided also to enable the student-teacher to acquire a sense of responsibility in taking charge of a class, to learn registration and the preparation of information required for administrative purposes, and so on. Arrangements are also to be made to secure attention to the further general education of the student-teacher. In this direction the co-operation of

secondary-school teachers is to be secured, and where possible the student-teacher will be encouraged to go to the headmaster of the secondary school in which he was a bursar to receive advice and guidance in his further studies. The staff of the secondary school will be engaged to assist in the correction of essays, Latin and French compositions, solution of mathematical problems, and in practical work of various kinds. The scheme is promising, and the results which follow its adoption will be awaited with interest.

A SCHEME for the inspection and examination of schools, combined with a system of school certificates, has been initiated by the Joint Matriculation Board of the Universities of Manchester, Liverpool, Leeds, and Sheffield. The senior school certificate will be of the standard of the Matriculation certificate, and holders of such a certificate will be exempted from the Matriculation examination, provided the certificate bears the proper subjects. Some local authorities will doubtless make use of this examination for the purposes of the leaving examination referred to in the "Regulations of the Board of Education for the Preliminary Examination of Elementary School Teachers."

IN the Oxford Local Examinations held in July last boys were examined at 217 centres and girls at 243 centres. The total number of candidates, exclusive of those at Colonial centres, examined was 21,185, namely, 3,526 preliminary, 8,302 juniors, and 9,357 seniors; of these, 2,831 preliminary, 6,007 juniors, and 6,331 seniors passed, making a total of 15,169. Of the preliminary candidates, 7 girls are placed in the first class, 13 in the second, and 100 in the third; of the juniors, 55 girls are placed in the first class, 86 in the second, and 368 in the third; of the seniors, 38 girls are placed in the first class, 90 in the second, and 472 in the third.

THE total number of candidates entered for the Cambridge Local Examinations held in July was 6,014, exclusive of 315 candidates examined at Colonial centres. In the senior examination 686 boys and 830 girls passed, 60 boys and 13 girls being placed in the first class. Sufficient merit was shown by 280 boys and 201 girls to entitle them to exemption from one or both parts of the Previous examination. Of the junior candidates, 1,068 boys and 938 girls passed, the numbers placed in the first class being 88 and 14 respectively. In the preliminary examination 255 boys and 196 girls satisfied the examiners.

THE greater part of the secondary education in London is provided in schools which are not maintained by the London County Council. These schools, which are under the management of governing bodies, are about ninety in number. Some forty of these are independent of the Council's assistance, but the Council gives grants to fifty-one secondary schools with the view of enabling them either to maintain a higher standard of efficiency than would be possible if they relied upon the income from fees and endowment only, or, in some cases, to accommodate a larger number of pupils than could be educated with funds derived from these sources only. The report of the executive officer on higher education, which has now been published, shows that during the year 1906–7 the sum of £74,275 was paid to such schools. Of this, about £32,000 was due for the fees of pupils holding County Council scholarships, and £42,275 was ordinary maintenance grant. Of the latter sum, £5,905 was voted for specific purposes, namely, £2,355 for equipment and £3,550 for increasing the staff or for increasing the salaries of the existing staff. Some particulars were given in the last report with regard to the secondary schools which were provided by the Council a year ago. Six new secondary schools, all for girls, were opened at the beginning of the year before last, giving a total accommodation of 1,570. Four of these, namely, Kentish Town, Peckham, Southwark, and Stockwell, are housed in buildings which were originally erected as pupil-teacher centres. After the summer holidays, 1907, the Council opened four new secondary schools, two for boys and two for girls, namely, Camden School for Boys, accommodation 270; Brockley School for Boys, accommodation about 120; Wandsworth School for Girls, in temporary buildings, accommodation about 90; St. Pancras School for Girls, temporarily housed in the Working Men's College, Crowndale Road, accommodation about 200. On the other hand, the Finsbury pupil-teacher centre, accommodating about 83 pupils, was closed, as the building was required entirely for training-college purposes.

SCOTTISH.

THE Lord Advocate, in opening a new secondary school in Hawick, took as his text the Education (Scotland) Bill. He declared that if the Bill were passed in its present form, the state of education in Scotland might be regarded as thirty years in advance of that of England and sixty years in advance of that of Ireland. The details of the new Bill advanced them at once by a generation. There were provisions for recreation play-fields, for gymnasia, for feeding and medical inspection, and for the thorough correlation of all grades of education. Best of all, by the terms of this Bill the capable pupil in the remotest hamlet could be brought into the central higher school, and there be supported adequately by maintenance allowance and bursary. Knox pleaded that the educational avenues should be free and as easily accessible to the poorest as to the highest in the land, and he did so not for the advancement of individuals, and not for individual ambition, but "for the comfort of the State at large and for the good of the Commonwealth of Scotland." So the present Bill was framed in the interests, not of particular individuals or classes, but of the nation as a whole.

THE Lord Advocate's *couleur de rose* description of the merits of the Education Bill would have come with more grace and fitness from one who had not been its sponsor. It is almost an outrage on good taste to have the right honourable gentleman standing up in public to praise his own offspring. So far as the Press and the general public are concerned, he has had to be both priest and clerk, for no one has said "Amen" to his educational heroics. The Lord Advocate would have us believe that an "educational millennium" is at once to dawn; but millenniums, whether educational or otherwise, do not come by observation, and it will require something more than administrative reforms to produce them. The present Bill is a good measure; but it serves no good purpose to go into hysterics about it. To say that it will at once place us thirty years ahead of England is to show culpable ignorance of the remarkable advance that has been made in that country during the past ten years. In education we are no more than holding our own.

MR. R. S. ALLAN, Chairman of the Glasgow School Board, declared at a recent meeting that all the good in the

Education (Scotland) Bill was more than counterbalanced by the canker of the surcharge clause. School boards, he said, welcomed every possible form of check upon their expenditure. They wanted their accounts audited, but the surcharge clause would enable an official who did not find in the Education Act a clear and definite authority for any expenditure to mark and charge that expenditure as improper, and to require the members who signed the cheque to repay it at their own cost. The proposed surcharge would paralyse all initiative on the part of boards. They dared not experiment lest an official sitting in a London office should disapprove and charge the innovators with the price of their experiments.

The Summer School at St. Andrews has come to a close after a successful session. The scheme as arranged for St. Andrews was unique in its way, in that it provided short courses of lectures and demonstrations in both professional and academic subjects. The course in professional subjects was intended to bring before teachers the latest developments and the most approved methods of teaching such subjects as history, geography, mathematics, and nature knowledge. There was no great need to offer direct instruction in these subjects. What was required was to widen the outlook of the students by presenting to them the newest and soundest principles upon which to base their methods of instruction.

The Higher Education Committee of the Educational Institute of Scotland has submitted a series of recommendations in regard to the University Preliminary examination. Owing to the impending changes in the arts curriculum of the Scottish universities, a readjustment of the regulations for entering upon a university course is urgently required. The conclusions of so representative a committee should prove helpful in determining the lines of the new advance. Wisely enough, the Higher Education Committee suggests that the group leaving certificate of the secondary school should be accepted as a passport to university studies. From those who have not obtained that qualification it is proposed to demand a pass in higher English, intermediate Latin, mathematics, and science, together with *one* of the following—a language (other than Latin or English), or history or geography, all on a higher standard. The committee declares that the function of a preliminary examination is to test whether candidates have received such a general education as will enable them to enter with profit upon a specialised course of university study, and that neither tradition nor the needs of any one profession should determine the subjects included or the standard exacted. With these sentiments there will be universal agreement, but there is room for much difference of opinion when it comes to their practical application.

The Scotch Education Department seems at last to have recognised that their well-intentioned efforts to frame a register of secondary-school teachers have resulted in intolerable anomalies and inconsistencies. The Department, it will be remembered, adopted a threefold classification of secondary-school teachers, "principal teacher," "teacher," and "assistant teacher." The Department, it seems, did not intend these names to denote relative degrees of merit, but school boards naturally so interpreted them and graded their teachers accordingly. From an interview that has taken place with the officials of the Department, it is probable that immediate steps will be taken to remove any misapprehension on the part of school boards and teachers as to the real meaning of the proposed register.

IRISH.

The results of the intermediate examinations held last June were published on the last day of August. The summary gives the following table:

Boys.

	Senior	Middle	Junior	Preparatory	Total
Number examined ...	474 ...	1,301 ...	3,575 ...	2,386 ...	7,736
Number who passed with Honours ...	167 ...	256 ...	545 ...	— ...	968
Ditto, without Honours	237 ...	572 ...	1,487 ...	1,374 ...	3,670
Total number of passes	404 ...	828 ...	2,032 ...	1,374 ...	4,638
Percentage of passes	85·2 ...	63·6 ...	56·8 ...	57·6 ...	59·9

Girls.

	Senior	Middle	Junior	Preparatory	Total
Number examined... ...	211 ...	678 ...	1,837 ...	921 ...	3,647
Number who passed with Honours	63 ...	124 ...	235 ...	— ...	422
Ditto, without Honours	116 ...	341 ...	850 ...	596 ...	1,903
Total number of passes...	179 ...	465 ...	1,085 ...	596 ...	2,325
Percentage of passes ...	84·8 ...	68·6 ...	59·1 ...	64·7 ...	63·7

The number examined this year was slightly less than last year, when the total was 8,165 boys and 3,656 girls—i.e., 11,821 boys and girls together, as compared with 11,383 for the present year; on the other hand, the percentages this year are on the whole somewhat higher. Whether in an examination intended for average pupils these percentages are not too low, and whether they are not purposely kept low in order to prevent fluctuations in the scale of school grants, are questions of interest which do not receive the attention they ought, and are conveniently shelved.

The new rule of the Intermediate Board, which we referred to last month, which forbids a pupil to enter a second time for examination in a grade in which he has already passed, has raised a storm of indignation. Many protests have been sent to the Board, and the consultative committee, representing heads of Irish schools, has met and forwarded a petition asking for its repeal. The object of the rule is particularly unfortunate. The Board is said to be anxious to save money in order to pay inspectors. As there is in many quarters a lurking suspicion of inspection, this is hardly the proper way to recommend this great reform to the minds of managers, and even those schools which are anxious for inspection will certainly falter in their support of it when it is to be accompanied by a diminution of the wherewithal to maintain their efficiency. The new rules, however, will still lie on the table of the House of Commons for a few days when it meets this month, and it may be that they will yet be rejected. The House of Commons cannot do anything but reject or pass them as they are, and if it rejects them the state of affairs will be most anomalous, considering that the school year has already begun.

The meeting of the British Association in Dublin naturally attracted great attention from Irish teachers to the Educational Section. Unfortunately, the first week of September is for intermediate schools the very busiest of the year, when they are just reopening after the summer vacation and are arranging the whole work for the forthcoming session. Comparatively few, therefore, of Dublin secondary-school teachers were able to attend the meetings, nor were the problems and difficulties of intermediate education at the present time put before it by any prominent representative of intermediate schools. The most interesting papers on general educational questions were by Mr. Gill and Prof. Benjamin Moore. The former, the secretary of the Department of Technical Instruction,

dealt with the whole of Irish education from the point of view of an administrator. He urged the abolition of the examination system, and the adoption of inspection, pointing out that this would leave the schools practically free schools. One might ask in answer to this whether the science and art classes in intermediate schools are free. These are independent of examinations and have inspection by the Department, but in place of examinations they have fairly stringent conditions as to time-tables and syllabuses. Mr. Gill's ideals, however, deserve to be studied carefully and borne in mind, more particularly in the initiation of the new university. They are three, and depend upon a primal condition of having a definite aim and knowing what you want to produce. They are: (1) to produce a nation of good men and good citizens; (2) to produce a people who could think with logically disciplined minds; and (3) to produce a people in a state of the best possible bodily health and development. So far as we know, the financial conditions necessary to secure these great ends in intermediate education were not considered.

WELSH.

AT the Eisteddfod just held at Llangollen, Mr. Owen M. Edwards, the chief inspector of the Welsh Department of the Board of Education, made an interesting and important speech on the teaching of Welsh literature. He urged that the greatest literary want of Wales at the present day is that of means of getting the children of her schools and colleges under the spell of Welsh literature, so that they will leave the schools with an appreciation of the greatest literature of the world—" the majestic literature of England and the brilliant and inspired literature of Wales. He appealed to the bards and *literati* of Wales to give literature an arm that would reach the school children. Once upon a time the greatest critic of English literature was criticising the life and work of one of the greatest English poets, and the one thing the poet did on which the critic bestowed unstinted praise was his laying aside his great heroic poems and his stirring politics in order to write a little book which was to make the driest of school subjects interesting and easy to young students."

"WHO among the bards," Mr. Edwards continued, "of the crowns and the chairs will do for the young people of Wales what Milton did for the young English students? The love of Welsh literature at its best depends upon the influence exercised upon the schools. The Board of Education has learned to speak in Welsh, and it is quite as ready and as anxious as any Welsh institution to cultivate Welsh in the schools of Wales." He was glad to learn that the Eisteddfod was also turning its attention to the schools of Wales, and endeavouring to give Wales a school literature, which was its greatest want. The bards would render a national service if they would leave odes aside for a while, and compose better books for the children.

IN connection with this subject there has just been issued the report of H.M. Inspector on the teaching of Welsh in the Cardiff evening schools. With regard to the teaching of Welsh literature, the following account is given: "A good knowledge of modern Welsh is presupposed; and books are read to illustrate the history of the development of the language. So far, the books read do not go back further than the middle of the seventeenth century. I found one class reading the 'Llyfr y Tri Aderyn' ('The Book of the Three Birds') of Morgan Llwyd. The members of the class were well acquainted with the characters, such as Cromwell and Harrison, which give colour to the allegory. I also found that they had a very satisfactory knowledge of the outlines of modern Welsh literature. The teachers are either certificated trained teachers or teachers who specialise on the teaching of Welsh. In every class I saw that the teaching was very efficient and very successful. It is quite clear that excellent work is being done in these Welsh classes. The educational effects will not end with the pupils themselves; many of them intend to teach others, either as a profession or as a pastime, in the future."

THE County Medical Officer, Dr. William Williams, has issued a report on the medical inspection of children in the public elementary schools of Glamorgan. In commenting on the various statistics which he presents, Dr. Williams speaks of the very significant fact that no fewer than 33·8 per cent. of the 4,021 children examined in the 117 schools dealt with were found to have defects *likely to interfere with their educational progress*. So far the medical inspection has continued for twelve weeks, but the schools have been representative of the eastern, central, and western divisions of the county, and of both boys and girls.

RECENT SCHOOL BOOKS AND APPARATUS.

Classics.

Selected Essays of Seneca and the Satire on the Deification of Claudius. With Introduction and Notes by A. P. Ball. xxxiv + 212 pp. (New York: The Macmillan Company.) 3*s.* 6*d.*—This book breaks new ground, and deserves a welcome for that reason. Seneca is an important figure, not only for the interest of his character, but for his place in history as Nero's tutor and adviser. He is not so much philosopher as moralist, but his moralisings have always been admired by the religiously minded, and they contain a good deal that appeals to the man of letters. Quintilian said a good thing of him: "You could wish that he had used his own talent, but some other man's taste." His Latin may not be the best to put before boys in the stage of learning, but it is hardly to those that this book is addressed; rather to those who are old enough to take some interest in moral questions. We have here a useful and characteristic selection: "Ad Polybium de Consolatione," "De Clementia," and ten "Epistulae Morales," together with the "Apocolocyntosis." The Epistles deal with such matters as gladiatorial shows, the Saturnalia, the study of philosophy, moral freedom, mental training. The notes are short and to the point, containing perhaps more translation than could be wished; but that is more excusable in an unfamiliar text. The introduction is good. It discusses Seneca's life, the Stoic philosophy, Seneca's works and style. A few books of reference are also named. The text is that of the Teubner editions, except a few changes which are enumerated at the end. The "Pumpkinification of Claudius" deserves special mention. It is, as readers doubtless know, a brilliant and bitter satire on the unlucky emperor, and is full of mordant wit. It is not only valuable for the picture of the emperor, but for its dramatic character; and it contains some well-known difficulties which certainly need notes. Here Mr. Ball's notes are excellent on all allusions, but the bits of translation are far from racy. When will some one clear up *mera mapalia* and *famam mimum* (ix. 1, 3)? But everything that research can do seems to have been done for this text.

Scenes from the Life of Hannibal. Selections from Livy, edited, with Historical Introduction, Notes, Maps, Vocabularies, and English Exercises, by W. D. Lowe.

126 pp. (Clarendon Press.) 1s. 6d.—This text is somewhat simplified, and by printing short phrases or sentences each on one line, the early part is made much easier for the learner. The method reproduces in print the effect of careful reading. We should think this book within the power of boys in the third year of Latin. We regret, however, that the quantities are marked in a very erratic way, occasional longs and shorts both. The only proper system is to mark all the longs, and to leave the shorts alone. The print of the notes is too small; publishers have no conscience in this matter, so important to the young, and we should hesitate to use the book on this ground alone. Too many difficulties are explained in the notes. The exercises are useful.

A Junior Latin Prose. By H. N. Asman. x+142 pp. (Methuen.) 2s. 6d.—This book is intended to suit the Oxford and Cambridge Junior Locals, and contains a short syntax, with exercises, and a short introduction to composition, with continuous passages for Latin prose, and a vocabulary. It is meant to follow a course in elementary Latin. Long vowels are marked, except concealed quantities. The syntax rules are mostly clear and simply put. The notes on prose composition are not so practical. It is useless, for example, to print a Latin period (p. 30) and its English translation, and tell your pupil to compare them, even with help; or at least this must be followed up by synthetical examples and exercises, in which the steps can be taken one by one. The first would be two sentences, given independently, and then one subordinated; then others may be added, until the period is built up. The defect is somewhat remedied in the exercises, but definite instruction is needed. We are amazed to see the statement that the end of a Latin sentence is the most important place (p. 41): the order of answers to questions shows that it is the beginning. Some useful hints follow on abstracts and metaphors. The exercises are of the usual incoherent type; and in our opinion such ought not to be used in the early stages at all, except as occasional reinforcement to more intelligent matter. The pieces of continuous prose, mainly historical and oratorical, are useful.

Greek Buildings represented by Fragments in the British Museum. By W. R. Lethaby. III. The Parthenon and its Sculptures. 71–146 pp. (Batsford.) 3s. 6d.—This is an admirable sketch and criticism in brief of the Parthenon, especially valuable for its detail, and for the technical description of methods of workmanship. Mr. Lethaby has many suggestions of his own to give, and all are worth consideration: see, *e.g.*, p. 134, Cecrops's tail (but why "Cecrop's tail"?), and p. 129, restoration of Hithyia. The rival interpretations of the pedimental sculptures are given, and criticised with sound judgment; and the writer's admiration for the work is expressed without gush, but in a most convincing way. We have rarely read a work on art that was so clear, reasonable, and enlightening.

English.

Report on the Teaching of English in the United States. By M. A. Williams. 88 pp. (Swan Sonnenschein.) 2s. net.—Miss Williams was the holder of the Gilchrist Travelling studentship in 1906, and decided to spend the autumn of that year in studying the scope, aim, and methods of teaching English in the United States. The present little volume is her report, and is in itself ample justification for founding travelling studentships. The work is a model of selection, and is illuminated throughout by sane criticism. A high tribute is paid to the enthusiasm of American teachers at the same time as weaknesses—usually the defects of their qualities—are discussed with sound judgment. All types of schools are passed in review, and in all of them the relative importance of English is insisted upon. We are glad to find that Miss Williams has drawn a very proper distinction between training in spoken English and training in oral composition. We cannot help thinking that far more attention might profitably be paid to the former in our own schools; it would make for that spontaneity which our children lack, and which American children seem to gain—not without one or two sacrifices—partly from early training in the spoken language, and doubtless much more from the extremely varied and unconventional themes set by their teachers. On the other hand, Miss Williams gives excellent reasons for her opinion that in many American schools study of technique and analysis of character are carried to an excess. Not the least interesting chapter of the report deals with the relationship of the public library with the public school, and we can only echo—and perhaps commend to the attention of education committees and of the Library Association—the author's firm belief that "American education benefits greatly from the fact that the public school and public library are often under the same central control."

Indexing and Précis Writing. By G. B. Beak. 303 pp. (Macmillan.) 2s. 6d.—This is as good a book of its sort as we know. As the author says, it does not differ materially from other text-books on the same subject, but he is justified in adding that it covers a somewhat wider field than usual. The introduction gives clear rules for successful work, and a very useful series of exercises and solutions drives them home. The body of the book is taken up with examples from official correspondence, law evidence, public speeches, and general literature. Candidates for Civil Service competitions will find here all they require.

English Composition. By C. L. Hanson. 241 pp. (Ginn.) 4s.—"The purpose of this book is to present the main principles of English composition in so simple and practical a form that the pupil will grasp them easily and will apply them naturally in his daily work." So runs the opening sentence of the preface; but even if the author's conclusion be correct, we hardly think that he was justified in producing one more of a very familiar type of book. We have here the same quaint mixture of portentous theory and elementary practice that American authors have given us so often; the chapter-headings seem old friends; even the same excellent type and paper seem to coerce our goodwill. But four shillings is a long price to pay for readable print.

Passages for Paraphrasing. Selected by D. M. J. James. 120 pp. (Blackwood.) 1s.—This book of selections has probably been composed with the Scottish leaving certificate in view, but it should find a ready welcome with many teachers elsewhere. There are a hundred and twenty verse extracts and forty in prose—all of them eminently suitable for this sort of treatment. An appendix contains twenty-five passages set in recent Scottish examinations. An exceedingly practical preface with three specimen passages adds to the value of the book; but we hope that the profane examiner will keep his hands from such specimens as the last—Wordsworth's sonnet, "The world is too much with us."

Mason's New English Grammars. Intermediate. Revised by A. J. Ashton. 218 pp. (Bell.) 2s.—This second volume of the revision has been based on the older "Outlines"

and the "Shorter Grammar," and we are glad to find that rules are illustrated by more examples than in the "Junior" volume recently reviewed in these columns. Moreover, the definitions, though still, we think, unnecessarily forbidding, are not altogether beyond the grasp of the pupils for whom they are intended. The exercises, which, by the way, are now appended to each chapter and not relegated to the end of the book, are very varied and sometimes consist of faulty sentences to be corrected. The historical introduction is necessarily short, but good enough to make us wish that it were longer.

History.

The House of Commons: its Place in National History. By J. H. B. Masterman. viii+120 pp. (Murray.) 1*s.* 6*d.*—Prof. Masterman was a bold man to undertake to sketch the history of the House of Commons in four lectures to an audience of working men, and his subject suffers naturally from the necessary compression. But within the limits assigned, he has done well what was possible. Teachers of all kinds will find in these lectures the salient features of our constitutional history, and though it would be well to avoid the temptation to deliver them as lectures, they should be useful as giving a bird's-eye view of what we so often miss in the details. Besides the lectures, there are included the addresses of the four chairmen, a selection from the answers given to questions at the close of each lecture, and "suggestions for further study."

The Government of the United Kingdom. By A. E. Hogan. xv+224 pp. (Clive.) 2*s.* 6*d.*—The incidental history is often doubtful, and there is too much talk about "theory" as opposed to practice; but the account of the present-day institutions of the British Empire is good and clear. It should be useful not only to the examination candidates for whom it is specially prepared, but, as the author says, for others who wish to know how our country is governed. The various "parts" are devoted to the Legislature, the Executive, the Judiciary, Local Government and Imperial Relations, *i.e.*, the Colonies and India.

A Historical Geography of the British Colonies. Vol. v., Canada. Part ii., Historical. By H. E. Egerton. vi+365 pp. (Clarendon Press.) 4*s.* 6*d.*—Prof. Egerton tells, in this little book, the history of Canada from the year 1763 until the present day. It is a useful summary of events, and is provided with abundant bibliographies, an index, and some maps. It would be more useful still if the maps had been better, and if the author had taken more pains to make his meaning clearer. There are many phrases the meaning of which we despair of understanding, and the early chapters especially will, we think, be too hard for pupils in our schools. The book seems rather to be addressed to those who are already fairly familiar with the subject, and the various councils, for example, are not sufficiently explained.

Geography.

Black's Geographical Pictures. Alpine series in three packets of six pictures each. 6*d.* a packet.—This is the first of a projected series of photographic reproductions designed to illustrate the workings of Nature on the earth's surface. The pictures measure $6\frac{1}{2} \times 4\frac{3}{4}$ inches, are well printed on cards, and are issued loose in a strong Manila paper envelope. Any six pictures may be selected to make up one packet. The Alpine set comprises eighteen pictures, from photographs taken by Miss L. E. Walter. They deal almost entirely with glacier work in the Alps, as is sufficiently indicated by some of their titles; *e.g.*, in Packet I., Nos. 1 and 2, "The High Alps from the Finsteraarhorn to the Eiger"; No. 3, "A Glacier Pass" (at the north foot of the Finsteraarhorn), and No. 5, "An Ice Fall" (on the Unter Grindelwald Glacier); in Packet II., No. 10, "A Region of Crevasses," and No. 12, "A Lateral Moraine" (both subjects on the Blümlisalp Glacier); in Packet III., No. 17, "Scree brought down by Avalanches" (borders of Lake Oeschinen). With the pictures the publishers issue a descriptive pamphlet by way of introduction and explanation. The author, Mr. H. J. Snape, after some preliminary remarks on the Alps and their glaciers, deals briefly with each picture *seriatim*, explains it, and adds a few questions on its points. It is suggested that to use the pictures in school each member of the class should have his, or her, own copy, and that the teacher should by means of questions and answers elicit the geographical features portrayed. The idea is quite sound, and as the pictures are, for the most part, excellently chosen and well reproduced, we can unhesitatingly commend the series to the notice of teachers. As a matter of fact, they are quite good enough to put in cheap frames for ornament as well as use. Many of them would also make capital insertions in the pupils' note-books with the class explanations added on the opposite page. But the questions which produce these explanations require to be chosen skilfully and should be directed, more or less, to what is fairly obvious, or mystification will ensue. The pictures are small, and details are naturally here and there obscure. We think, therefore, that the children would have to rely too much on the eye of faith, and not sufficiently on their own everyday organs, to answer some of Mr. Snape's questions—*e.g.*, "What kind of trees are there to the right of the picture?" (No. 17), when only the barest indication of a tree or two is visible; or "Why is the glacier so dirty?" (No. 6), when there is nothing in the picture to show which is dirt and which is shadow. On the other hand, where the details are *large*, as in the "Ice Fall" (No. 5), the four suggested questions are "visualised" at almost the first glance: (i) Account for the broken character of the glacier. (ii) Do you see an *arrête*? (iii) Do you see any *séracs*? (iv) Account for differences of colour in the surface of the ice-fall. We should not ourselves put the questions quite in this form; they are too barefaced; but the points are there, and the alert teacher will know how to lead up to them, and, in the leading, will ensure a most interesting geography lesson. We shall look forward with interest to further ventures in this series.

Mathematics.

A School Arithmetic. By H. S. Hall and F. H. Stevens. xiii+475+(Answers) xxxix pp. (Macmillan.) 4*s.* 6*d.*—For pupils who have already made some progress in arithmetic and are at the stage for tackling a serious text-book, the work before us will be found, we think, to be very satisfactory. It is written with the skill of the practised teacher, and it is in line with all the reasonable requirements of pupil and examiner alike. The selection of material seems to be excellent throughout the book, and the explanations and illustrations of rules and methods are both clear and concise. A feature that will, we hope, become general is the introduction at a comparatively early stage of generalised arithmetic; the algebra of ordinary numbers can be readily approached through arithmetic, the difficulties of negative numbers being postponed to a later period.

Modern Geometry. By C. Godfrey and A. W. Siddons. xvi+162 pp. (Cambridge University Press.) 4*s.* 6*d.*—The

course developed in this text-book covers the schedule of modern plane geometry required for the special examination in mathematics for the ordinary B.A. degree at Cambridge. The material from which an introductory course has to be selected is now very great, and the task of selection is not easy; the theorems in the text and among the exercises seem to have been judiciously chosen, though we think some reference might have been made to involution. The exposition is very clear, and the book should form an interesting supplement to any school course of geometry. One does not see, however, why in chapter v. the position ratio should be denoted by BX : CX, and in the next and subsequent chapters by BX : XC. The matter is perhaps a small one, but it is, we think, desirable to adhere to one notation.

Ratio Co-ordinates and Carnot's Theorem. By J. L. S. H. 48 pp. (Whittaker.) Paper covers, 1s. net.—If the lines joining a point P in the plane of a triangle ABC to the vertices cut the sides in the points A′, B′, C′, then the ratios BA′ : CA′, CB′ : AB′, AC′ : BC′ are called the ratio co-ordinates of P; of course, there is an identical relation connecting them, namely, that their product is −1. By means of these co-ordinates many theorems in the projective geometry of conics are established in a very simple manner; the pamphlet would probably be found both interesting and useful by students who have made a beginning in projective geometry or have mastered the elements of co-ordinate geometry.

The Principles of Mechanics. By Henry Crew. x+295 pp. (Longmans.) 6s. net.—It is stated in the preface to this text-book that its pages represent a lecture course which during several years has been given to second-year students at North-western University. The range is confined to that part of mechanics which is common ground for the physicist and engineer, and the science is built up "upon a few simple experiments and upon definitions which convey at once the physical meaning of the quantities defined." The aim that the author has in view is one with which many students of physics and engineering will sympathise, and the exposition offers many points of interest. Yet the attempt to cover a range which includes the dynamics of elastic bodies and fluid motion, as well as the kinematics and kinetics of the point and the rigid body, in a book of this size is somewhat hazardous, and is apt to induce a conciseness of expression that demands very great attention on the part of the student. While we think that the treatment is on the whole sound and clear, we fear that most of the readers whom the author has specially in view will find the book to be hard reading; but if they master the text and work all the examples (not very numerous) they will have acquired a fair working knowledge of the subject.

Science and Technology.

"Stickphast" Cement. (The Leadenhall Press.) In tins, 6d. and 1s.—We have received from the manufacturers of the well-known "Stickphast" paste a sample of a new cement which bids fair to supersede glue and ordinary cements. It can be used with a variety of materials, including china, glass, and wood. Its use is remarkably simple. It is only necessary to cover the edges of the fracture with the semi-liquid cement, to fix them together, and leave them for forty-eight hours in a warm, dry place. In the case of china, the joint thus produced seems stronger than the original material, and, being white and opaque, is almost invisible. If the article can be baked in an oven for two or three hours, it may even be used with boiling water. Experiment, however, seems to show that prolonged immersion in boiling water, while not destroying the joint, renders it somewhat brittle. From what has been said it is evident that this preparation will serve a variety of useful purposes in the laboratory. Broken earthenware apparatus, such as mortars, can be made as good as new, while for articles which must resist heat this "Stickphast" cement is probably unique.

Good Health. By Frances G. Jewett and Alice Ravenhill. x+171 pp. (Ginn.) 1s. 6d.—This little book is the first of a series of readers on hygiene, planned by Dr. L. H. Gulick, for use in the primary schools of the United States. It has been edited for English pupils by Miss Ravenhill, and, apart from the retention of a few Americanisms which have evidently been overlooked, is very suitable for the instruction of English children from eight to ten years of age. It is written in clear and interesting language, and is well illustrated.

Parasitic Plants. 33½ in. by 27½ in. (W. and A. K. Johnston.)—This is a very well-produced wall-sheet, mounted on rollers and varnished, showing coloured illustrations of eight of the commoner parasitic flowering plants, from original drawings by Ethel M. Barlow. Brief but useful notes are provided at the foot of the sheet, which may be recommended.

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.

An Appeal to British Teachers.

I am bold enough to call the few observations I am about to make "An Appeal to British Teachers," as I am specially anxious that all teachers who may do me the honour of reading this appeal should realise, as I know large numbers do, the closeness of the connection between the child and the Empire. When a teacher once realises that the children in his charge will, if they live for some twenty years, assuredly become responsible citizens of the British Empire, and will, together with 54 millions of other white people, rule over the destinies of some 350 millions of helpless, voiceless, dependent, coloured peoples, all subjects of the King-Emperor, and that these children are destined to assist in governing one-fifth of the earth's surface—when, I say, a teacher once realises these stupendous facts, he must indeed be devoid of imagination and of a sense of responsibility if he does not feel moved to exert every power with which God may have endowed him in order to train these children so that when they come to full age they may be fit to bear worthily the heavy though honourable burdens attached to British citizenship.

It may be said that these are platitudes which are recognised and acknowledged by all patriotic and thoughtful teachers, and that there is no need to emphasise them.

Thank God! there are thousands who recognise the grave responsibilities attached to the profession of teaching, and are daily doing their utmost to train the children under their care in all the virtues which tend towards good citizenship. But are there no exceptions? Are the overwhelming claims of duty universally recognised in the

modern schoolroom, on the part of both teachers and pupils? Are the virile qualities of fortitude and of unconquerable pluck in the face of difficulties, so indispensable to a ruling race, taught by example and precept by the majority of teachers, and is the seriousness of failure in attaining these qualities sufficiently realised?

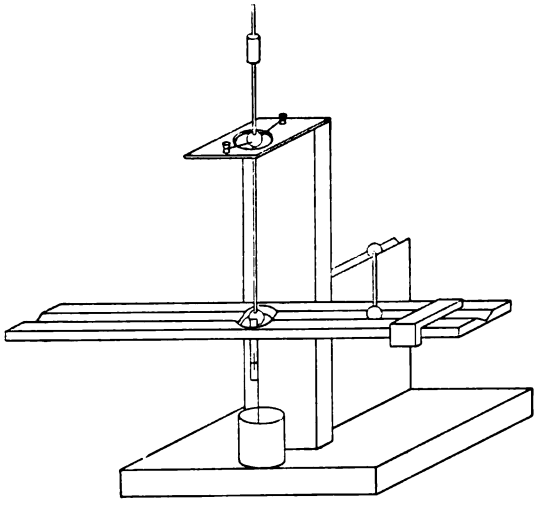
I fear that there is grave national danger in the growing love of pleasure and in the sentimentality of the present day. The moral virtues have always withered and died under the soft breath of ease and luxury, and have flourished under the bracing blasts of pain, of struggle, and of discipline. The path of duty is the path of safety in the schoolroom as well as in other departments of life.

My appeal to British teachers is to consider themselves, together with the parents, as the trustees of the Empire in the training of the children under their control.

September 8th, 1908. MEATH.

An Experiment to verify the Inverse Square Law for Magnetic Poles.

IN this experiment point magnetic poles were secured by the use of ball-ended magnets. The spherical end of one of these magnets was pierced by a small hole and suspended from a thin strip of phosphor bronze. The strip was fastened to the magnet by a little shellac and clamped



in position by binding screws. The deflecting pole of the other magnet moved in a horizontal groove in the direction of the line of motion of the free pole of the suspended magnet, and the other pole was rendered idle by its position in a groove at right angles to this direction.

The force between the two poles is proportional to the small displacement of the free pole of the suspended magnet, and the measurement of this was made with a microscope. This displacement was found to be too small, and a few additions had to be made to increase the sensibility of the suspended magnet. The upper pole of the magnet was fitted with a brass rod and sliding weight, so that the sensibility could be readily altered, and a strip of ivory with cross-lines engraved on it was fastened to the lower pole to serve as a reference mark. The observations were made more quickly by damping the oscillations of the suspended magnet with a mica vane completely immersed in water, and the disturbances due to draughts were prevented by a suitably shaped hood. A scale was fixed to one of the grooves, and the position of the deflecting pole was found with the aid of a slider.

The microscope for measuring the displacement had a linear magnification of 30, and was provided with an eye-piece scale of 100 divisions, of which each division was equal to 0·05 mm. The table below gives the results of an experiment in which the first pair of eye-piece scale readings were obtained with the north and south poles of the deflecting magnet to the right, and the second pair with the poles to the left, of the suspended magnet. The free pole of the suspended magnet was a north pole, and the poles of the deflecting magnet were assumed to be of equal strengths and situated at the centres of the spherical ends.

Mean distance between poles d	Eye-piece scale readings		Displacement of free pole	Mean displacement f	Displacement × distance² $f \times d^2$
	N. pole	S. pole			
cm.					
7	88·8	7·0	81·8		
	8·8	87·3	78·5	80·2	393 × 10
8	79·7	16·9	62·8		
	17·4	78 8	61·4	62·1	397 ,,
9	72·9	23·0	49·9		
	24·2	72·2	48·0	48·9	396
10	67·8	27·8	40·0		
	29·0	68·0	39·0	39·5	395
11	64·0	30·7	33·3		
	32·5	64·5	32·0	32·7	396
12	61·0	33·5	27·5		
	35·5	62·0	26·5	27·0	389
13	58·8	35·1	23·7		
	37·5	60·4	22·9	23·3	394
14	56·8	36·7	20·1		
	39·5	59·0	19·5	19·8	388

No attempt was made to revise the doubtful readings, and it will be seen that the larger variations of the product $f \times d^2$ arise chiefly from errors in the measurement of the smaller displacements.

If a magnetised knitting-needle be substituted for the suspended magnet, the adjustable weight becomes almost unnecessary; the microscope may be focussed on the side of the magnet, and by controlling the oscillations with a small magnet the damping device may be omitted. I have found that, with this modification, good results can be obtained, but I have used ball-ended magnets throughout for the reason stated above. F. W. JORDAN.

South-Western Polytechnic, Chelsea, S.W.

A Model to illustrate Variation in Length of Day.

PROBABLY most teachers of geography have experienced some difficulty in explaining to children from twelve to fourteen years of age, and even older, the cause of the difference in the length of day or night; a difficulty due to the fact that in many schools it is not always possible to darken the room sufficiently to use the tellurian or orrery, and even when this is possible the model of the world of the orrery is so small that the children cannot see the shadow readily or clearly. Of course, it may be thought by some teachers that such an explanation should be deferred until the children are older (fourteen to fifteen years), when the problem may be explained very often with the help of blackboard diagrams alone. There is a great deal of truth in this, and, as a rule, I should defer the little mathematical geography that is necessary until that age; but it often happens that questions are asked by the younger children; and when they are eager for an

explanation I think, in most cases, it should be given them, for the very fact that they know it is something a little too difficult for them often makes them more interested and successful in grasping it.

I have found the following device has made this question quite clear to boys and girls from eleven to twelve years of age. To fit the ordinary school globe I had a hemisphere of wire made, and to this was sewn a piece of black cloth or linen, thus making a cap or hood to cover half the globe. The ends of the wire did not meet (see Fig. 1, E), and there was a slit left in the cap (E-D, Fig. 1) to enable it to be passed over the stand (E-D, Fig. 2). Strings at F and H attached it to the globe, which was free to turn underneath it. Now it was easy for the form to understand that the black cap represented the shadow cast by the sun, and for them to realise that, according to the earth's position, the shadow changed, &c. The globe was then placed in the position occupied by the earth in the northern summer, the imaginary position of the sun fixed, and the cloth shadow properly arranged (its position was described by the form when they were told the position of the sun). On turning the globe slowly the children could see clearly what countries entered the shadow first and what countries were the first to emerge from it;

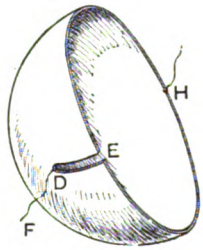


Fig. 1.

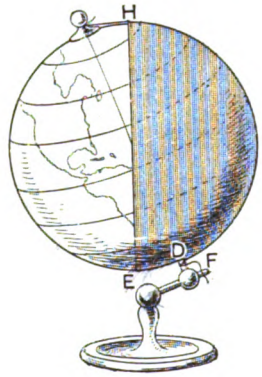


Fig. 2.

they could understand that some were in the shadow longer than others; and, on the globe being moved to the position occupied by the earth in spring and autumn and the shadow duly altered, they understood the occurrence of equal day and night, and the long duration of day and night in the polar regions.

Mabel I. R. Polkinghorne.

Haberdashers' Aske's Girls' School, West Acton.

The Use of Fused Silica.

The use of fused silica for making weight-thermometers offers many advantages. The coefficient of expansion of this material is so low that the correction for it becomes of very slight importance. Also the fact that it is unaffected by even the most sudden changes of temperature makes it possible to fill the thermometer with any liquid in a small fraction of the time required to fill a glass thermometer. I had some made about a year ago, and although they have been several times in use there has been no case of breakage. It is necessary, of course, to use the transparent variety of the material.

Brighton College. W. Bennett.

Science Examinations in Scottish Schools.

In the notes by your Scottish correspondent in the September issue, there occurs a remark that may possibly mislead some of your English readers. Discussing the recent leaving certificate examination in science, he says: "The Department gives credit in science and drawing, not for knowledge acquired, but for time spent, whether well spent or not."

This cannot be meant to be taken literally. It is true that the Education Department does not give a pass unless the prescribed time has been spent on instruction in the subject; and there may legitimately be difference of opinion as to the wisdom of such a rule. But the converse does *not* hold; and if any science master in a Scottish school is under the impression that badly prepared pupils will pass because they have had the prescribed number of hours of instruction, it is certain that he has only to make the experiment of presenting them for examination to be speedily disillusioned.

It seems strange that anyone acquainted with the excellent method of science examination that has been adopted for Scottish schools should make a statement so little likely to be correct.

W. J. Gibson.

The Nicolson Institute, Stornoway.

I have to thank Mr. Gibson for directing my attention to the words in question, and for giving me an opportunity of stating that they were not intended to convey the shadow of a complaint against either the examinations or the examiners in science. I know no examinations where the methods are so thorough and searching, and the examiners so patient, painstaking, and considerate. But what is the use of impartial and thorough examinations when the hands of the examiners are tied by the rules of their Department, and when they are unable to pass those who, in their opinion, are best qualified to pass, because they have not completed the magic circle of hours?

It is not suggested that badly prepared pupils pass, but that many of the best prepared—best prepared, not relatively to their number of hours, but absolutely—fail. A system under which that can and does take place stands self-condemned, and the Department itself seemed conscious of the fact when it issued the explanatory circular that called forth last month's notes. It is, however, perhaps well that I should know that Mr. Gibson, in his eyrie in the far north, has his eye upon me, and is keeping watch and ward lest the simple-minded Sassenach should be beguiled.

Your Correspondent.

The School World.

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Editorial and Publishing Offices,

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ON THE USE OF VULGAR FRACTIONS AND DECIMALS.

By F. E. ROBINSON, M.A.
St. Paul's School, London.

THE prominence given to the metric system of weights and measures and the more frequent use of decimals in computations are the most noteworthy of the reforms which have been effected of late years in the teaching of arithmetic. A few years ago decimals were treated in an isolated chapter, consisting chiefly of arbitrary rules for their multiplication and division and for their conversion into vulgar fractions; almost the only use to which the pupil put the knowledge acquired from this part of the subject was to convert decimals into vulgar fractions and *vice versa*. The reason for adopting this as the most convenient method of dealing with decimals was most probably one that is familiar to all practical teachers, viz., if the ordinary boy is given two methods of doing the same thing, there is great danger that he will be but superficially acquainted with both and never really at home with either. Formerly in arithmetic books all calculations were made in vulgar fractions; the answers were all given, and had to be obtained, correct to the exact fraction. Hence arose the custom of immediately converting into vulgar fractions any quantities given in the question, in order that the usual rules might be employed without variation.

This, of course, was bad; it involved much useless labour, and was responsible for the waste of much valuable time; but, if the work was accurately performed, the result was always correct. Theoretical accuracy was the one object to be attained; the pupil had only to follow the path marked out for him, and, provided that he made no "slips," he would reach the goal.

Now the attitude of teachers towards decimals is quite different; the greatest pains are taken to impress on the mind of the pupil the true meaning and simplicity of the decimal notation, and to explain to him how he can use them to the best advantage, especially in approximate calculations or in examples on practical measurements, where absolute accuracy of the old vulgar-fractions type is admittedly unattainable.

But unfortunately the zeal for reform has carried many, both teachers and pupils, too far; they have exalted decimals to the same false position which was formerly occupied by vulgar fractions: in correcting one error they have fallen into another of a precisely similar nature.

If the pupil is to be able intelligently to perform calculations by methods other than mere mechanical rules, or to obtain, without useless expenditure of time and labour, results which are sufficiently correct for the purpose required, he must be taught both methods and must be able to decide for himself when it is to his advantage to employ either or both. Hence, when a boy has thoroughly mastered the principles, and familiarised himself with the methods of manipulation of both vulgar fractions and decimals, he has yet to learn to exercise his judgment so as to make proper use of his knowledge.

All good teachers do use this discrimination in the choice of their own methods, but some teachers do not fully realise that very few of their pupils are able without assistance to adapt their methods to the various cases they meet with, when the questions are dissociated from a particular set of examples of a given type. It entails on the part of the pupil the exercise of the important faculties of judgment and foresight; from an educational point of view, this is probably the most valuable part of a thorough training in arithmetic.

Most boys find it very difficult to decide which of two alternatives should be adopted in any given case, and the teacher is tempted to avoid this difficulty by instructing his pupils always to pursue one method; but, though for the time being the results may appear satisfactory, the educational value of such a process is extremely doubtful, and the pupil acquires neither judgment nor power of initiative.

It is mainly for this reason that we deprecate the entire substitution of decimals for vulgar fractions; but there are other reasons, and a short discussion of the relative merits of the two methods may not be uninteresting, and will not be useless if it induces teachers to recognise the necessity for teaching their pupils to use discrimination, and to form the habit of laying down a plan of operations before commencing the actual calculations.

When British money is expressed as the decimal of a £ correct to three places (which can be done at sight), these decimals are usually approximate only, and cannot therefore be multiplied by a number greater than unity without risk of error. They can, however, be divided by a number greater than unity, or, which is the same thing, multiplied by a number less than unity, and the error in the result will be less than the error in the original decimal. To find, to the nearest farthing, the result when £37 3*s.* 5*d.* is divided by 365, we proceed thus:

£0·102 = 2*s.* 0½*d.* to nearest farthing.
365) 37·171
365
671

But if the exact quotient and the remainder were required, the above method would be useless. If we apply the same method to find the result when 3*s.* 5*d.* is multiplied by 365, we have:

£
0·171
365
51·3
10·26
0·855
£62·415 = £62 8*s.* 3½*d.*

But 3*s.* 5*d.* × 365 = £$\frac{41}{240}$ × 365 = £$\frac{2993}{48}$ = £62·354 = £62 7*s.* 1*d.*

By actual multiplication we also obtain £62 7*s.* 1*d.*; thus the first method gives a result which is wrong by 1*s.* 2½*d.*, and no amount of care exercised by the pupil can avoid this error, which is due to £0·171 being taken as the exact equivalent of 3*s.* 5*d.* It is instructive to notice that in both methods the rule for decimalisation of money at sight has been used, but with different results: in the first case the answer is certain to be in error by an amount depending on the error in the original decimal and on the multiplier; in the second, the error in the result must be less than ¼*d.*

We thus see how dangerous it is to instruct a boy always to convert money into decimals of a £; it is not always even the shortest method, and in many cases cannot give a correct answer.

It is sometimes urged that the errors arising from the use of this process are so small as to be of no practical importance. This is true; but when an exact answer can be found, there seems little force in the contention that the result is not accurate because we have adopted a method which is not capable of giving a trustworthy result. The operator must choose a suitable method as well as perform his calculations accurately.

It is the possible existence of error in the answer which makes the use of three-figure decimals so difficult to acquire, and the failure to exercise sufficient care in their use is certain to bring discredit upon the method, or, what is worse, to induce the pupil to believe that he need not bother about obtaining correct results.

The chances of error are minimised, but not eliminated, by finding the decimals correct to five places, but few boys take the trouble to learn how to do this quickly and accurately.

The remarks made above still apply in all cases where the decimals are only approximately the equivalents of the quantities they replace. But vulgar fractions are the exact equivalents of the quantities which they represent; hence in using them the pupil is not troubled about the possible inaccuracy of his answer, provided that he makes no numerical errors in calculation.

Assuming now that proper precautions are taken to ensure the required degree of accuracy, the question arises whether it is better to use vulgar fractions or decimals. The use of decimals simplifies the operations, which generally become merely multiplications and divisions, which can be contracted at will, so that useless figures can be omitted; the use of vulgar fractions may enable us, by cancelling and by reducing to simpler equivalent forms, to reduce the size of the numbers involved, and so to obtain a correct answer with the least possible labour. As a general rule, therefore, we use the former method whenever the result is only required to a limited degree of accuracy, and the exact answer would be useless or meaningless; but if the exact answer is required we should use the latter method.

It must be remembered that, though any terminating decimal can be replaced by a vulgar fraction, the converse is not true, so that a calculation, which, if performed in fractions, will give an exact answer, may only give an approximate result when decimals are employed. Further, quantities which can be expressed by simple vulgar fractions are often unwieldy when expressed in decimals, and the effect is to substitute for an easy short division a long multiplication, attended by the difficulty of contracting at the proper place. On the other hand, when the quantities have been expressed as vulgar fractions, it often happens that in the final stage no cancelling can be done, and much useless labour must be performed to obtain a result of any kind. These are the chief advantages and disadvantages of the two methods; the following examples will illustrate the utility of making a judicious selection of methods of procedure.

Much time is wasted in reducing a vulgar fraction to a decimal by long division, when it can conveniently be effected by successive short divisions; thus in the following cases the saving of labour is obvious:

$\frac{23}{35} = \frac{4\cdot6}{7} = 0\cdot6\dot{5} = 0\cdot6\dot{5}7142\dot{8}$;
$\frac{113}{352} = \frac{28\cdot25}{88} = \frac{3\cdot53125}{11} = 0\cdot3210227$.

This method should always be employed when powers of 2 or 5 are factors of the denominator.

It is imperatively necessary that the pupil should remember that ½ = 0·5, ¼ = 0·25, ¾ = 0·75, and ⅛ = 0·125; from the last the values of ⅜, ⅝, ⅞ can easily be obtained by simple multiplication. The following examples will illustrate the use of these equivalents.

Find the product of $3{\cdot}842 \times 9{\cdot}875$.

$$9{\cdot}875 = 10 - 0{\cdot}125 = 10 - \tfrac{1}{8}$$
$$3{\cdot}842 = s.$$
$$10$$
$$38{\cdot}42 = 10s.$$
$$0{\cdot}48025 = \tfrac{1}{8}s.$$
$$37{\cdot}93975 = 9{\cdot}875 \times s.$$

Find to the nearest farthing the value of 8·125 of £4 6*s.* 7*d.*

£	*s.*	*d.*	
4	6	7	$= s.$
		8	
34	12	8	$= 8s.$
	10	8	$= \tfrac{1}{8}s.$
35	3	6	$= 8{\cdot}125s.$

Find to the nearest farthing the value of 0·08125 of £4 6*s.* 7*d.*

£
$4{\cdot}329 = s.$
8
$34{\cdot}632 = 8s.$
$0{\cdot}541 = \tfrac{1}{8}s.$
$35{\cdot}173 = 8{\cdot}125s.$

$\therefore$ $0{\cdot}08125s. = £0{\cdot}352 = 7s.\ 0\tfrac{1}{2}d.$ to the nearest farthing.

In this example the money is expressed as a decimal to three places; there can be no error in the result, for the multiplier is less than unity.

Again, many sums of money in frequent use are simple fractions of a £1, viz., 6*s.* 8*d.* $= £\tfrac{1}{3}$, and 3*s.* 4*d.* $= £\tfrac{1}{6}$; from these we can deduce the values of $£\tfrac{2}{3}$ and $£\tfrac{5}{6}$.

When such sums occur they should be expressed as vulgar fractions of a £, not as decimals.

Find the value of 3·7248 of £5 13*s.* 4*d.* to the nearest farthing.

£5 13*s.* 4*d.* $= £5\tfrac{2}{3} = £(6 - \tfrac{1}{3})$.

£
$3{\cdot}7248 = s.$
6
$22{\cdot}3488 = 6s.$
$1{\cdot}2416 = \tfrac{1}{8}s.$

$\therefore$ £5 13*s.* 4*d.* $\times 3{\cdot}7248 = £21{\cdot}107 = £21\ 2s.\ 1\tfrac{3}{4}d.$

When neither the sum of money nor the decimal can be easily expressed as a vulgar fraction, we can with advantage proceed thus:

Find the value of 3·8456 of £4 18*s.* 4*d.*

£4 18*s.* $= £4{\cdot}9$ and $4d. = \tfrac{1}{60}$ of £1.

£
$3{\cdot}8456$ = value at £1
$4{\cdot}9$
$15{\cdot}3824$ = „ £4
$3{\cdot}46104$ = „ 18*s.*
$4d. = \tfrac{1}{60}$ $0{\cdot}06409$ = „ 4*d.*

$\therefore$ £4 18*s.* 4*d.* $\times 3{\cdot}8456 = £18{\cdot}9075 = £18\ 18s.\ 1\tfrac{3}{4}d.$

In the above examples we have dealt with British money only, but it will be easily seen that similar processes can be applied to other quantities; our object is to show how the principles can be applied rather than to give detailed devices for shortening the work; these the pupil must be taught to discover for himself.

It should be noticed that a percentage is merely the numerator of a fraction the denominator of which is 100, and it can be expressed either as a vulgar fraction or as a decimal.

In calculating the amount of £475 15*s.* in three years at 2½ per cent. compound interest, we can proceed thus:

£
$475{\cdot}75$
$2\tfrac{1}{2}\% = \tfrac{1}{40}$ $11{\cdot}89375$
$487{\cdot}64375$
$2\tfrac{1}{2}\% = \tfrac{1}{40}$ $12{\cdot}19109$
$499{\cdot}83484$
$2\tfrac{1}{2}\% = \tfrac{1}{40}$ $12{\cdot}49587$
Amount $= £512{\cdot}331 = £512\ 6s.\ 7\tfrac{1}{2}d.$

Or thus: rate per £ $= 0{\cdot}025$

$\therefore$ $A = £475{\cdot}75 \times (1{\cdot}025)^3$
$= £512{\cdot}33072 = £512{\cdot}331 = £512\ 6s.\ 7\tfrac{1}{2}d.$

The working in the latter method is not shown, but it is evident that it is much longer than in the former. When, however, logarithms are used, the latter method is always used.

By selling an article for £2 8*s.* a man gains 20 per cent.: at what price should he sell to obtain 15 per cent. profit?

120% of cost price $= £2\tfrac{2}{3}$

$\therefore$ 115% of cost price $= £\tfrac{12}{5} \times \tfrac{115}{120} = £\tfrac{23}{10} = £2\ 6s.$

In calculating the values of infinite series to a given degree of accuracy, each term should be replaced by its equivalent decimal; the pupil can at once see when he has taken sufficient terms, and the sum can then easily be obtained.

Sometimes a decimal can be replaced by the sum or difference of simple vulgar fractions; thus—

$$3 + \tfrac{1}{7} - \tfrac{1}{800} = 3{\cdot}142857 - 0{\cdot}00125 = 3{\cdot}1416 \text{ nearly.}$$

Instead of multiplying by 3·1416 we can employ the equivalent fractions as in the following example.

Find the circumference of a circle the diameter of which is 3·456 m.

$3{\cdot}456 = s.$
3
$10{\cdot}368 = 3s.$
$0{\cdot}4937 = \tfrac{1}{7}s.$
$10{\cdot}8617$
$0{\cdot}0043 = \tfrac{1}{800}s.$
Circumference $= 10{\cdot}857$ m. nearly.

In questions relating to stocks the prices of stock are usually stated in pounds and fractions of a pound, and the rates per cent. are given as fractions; generally there is nothing to be gained by expressing these fractions as decimals; as a rule it is best to perform the calculations in fractions, but the final result can often usefully be expressed as the decimal of a pound, from which the answer in £ *s.* *d.* can be written down at sight.

THE HOUSE SYSTEM IN JUNIOR SCHOOLS.

A Discussion and an Experiment.

By Caleb Rees, B.A.

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IT is a commonplace of educational theory—both amateur and expert—to say that morality should be the ultimate aim of the teacher's work. Opinions differ, however, as to the best interpretation of this aim, and there is even greater disagreement as to the best methods of attaining it. The average practical teacher has grave doubts as to the possibility of securing from ordinary instruction the moral effects that are promised by the Herbartian philosophy, while the high theorist, on the other hand, is quite emphatic in his protest against the futility of trying to secure the same results by specific inculcation of moral ideas. Then, further, there is the extreme disciple of Rousseau, who denies the possibility of all moral education until the onset of adolescence; but he may be ruled out of court, for English opinion is still, on the whole, sufficiently orthodox in this matter to re-echo Dr. Arnold's wish that it were possible to "force" moral growth so as to produce beforehand a manly character to withstand the dangers of the period of change. Economic forces also are against the Rousseauist, and when it is pointed out to him that few English boys and girls remain at school sufficiently long to reach the "most favourable period" for moral education, he has no answer but to pray for a social revolution.

Meanwhile the teacher cannot stand still, and he has two courses open to him. He must choose between those who aim at securing morality mainly through a process of intellection, and those who consider that morality is chiefly a matter of action. The only alternatives are the intellectual methods advocated by the Moral Instruction League, and the practical methods of organising institutional life advocated by the followers of Dr. Arnold, of Rugby. The present tendency in elementary schools seems to be in the former direction, probably more from the force of circumstances than from the weight of argument. It is felt perhaps that the gulf between the ideals and methods of a great secondary school with old traditions and high social advantages on one hand, and the possibilities of a modern elementary school of democratic origin and restrictive conditions on the other, is too great to be readily bridged. But the ideals of the public school are no longer exclusive property, for the external trappings of the house system have been adopted in many State-aided secondary day schools of recent foundation, and in not a few cases the essence of corporate life has been caught.

The new movement to educate future primary-school teachers in secondary schools may result in a further extension of the public-school ideals by providing a channel for them to permeate the elementary-school system of the country. The obstacles in the way are, however, numerous and difficult to surmount. Teachers are inclined to be despondent in the face of adverse home influences, and tend to regard conditions which it is their duty to remove as valid excuses for not making the attempt. It is further urged that the social life characteristic of a good secondary school would not be possible in an elementary school even in the best of circumstances, since children under fourteen have not developed the social instincts which make corporate action and self-government possible. This is probably true as regards self-government, but social sentiment exists among young children to a much greater degree than is generally recognised, even by professed students of childhood, and it ought to be one of the principal functions of the school to provide for each stage of development suitable opportunities for exercising the social virtues appropriate to it, in preparation for moral life in adult society. Unless the school organises itself for this purpose, there can be no justification for its existence beyond one of mere economic necessity.

An experiment in applying this principle for junior boys was started two or three years ago at the North Manchester School under the direction of Mr. A. W. Dennis, and what was at first but an extraneous organisation for conducting athletic sports has by this time been developed into an integral part of the school system. The school is a preparatory branch of the Manchester Grammar School, and the boys range in age from six to fourteen—identical with the range of a public elementary school. There were, however, some circumstances favouring the experiment here that are not available in the average primary school, such as the possession of a playing-field in the immediate vicinity and the inheritance of the traditions of the mother school. But there is an essential correspondence as to age, and similar experiments are possible, with some modifications, in all schools embracing the same period of life.

The nucleus of the system was created by dividing the school into four equally balanced "Houses," to supply some higher motive than "pot-hunting" for partaking in athletic sports. Following the example set by Mr. Paton at the mother school, it was decided to dispense altogether with prizes of the usual kind, and make the gaining of a house shield the chief object of pursuit. As accessory to this, however, small token cards were granted to all those who secured points for their house by attaining first or second place in any event. The houses succeeded so well in arousing the enthusiasm of their members for this co-operative undertaking—securing practically full entries—that it was decided to retain the system permanently so as to influence if possible other phases of school activity. For a term or so this was done somewhat spasmodically. A master might occasionally examine the weekly report-books of some of his house-members, or incite an idler to join the library, or urge his house-captain to challenge another house to a

hockey match. After a time, however, it became clear that such efforts, to be effective with young boys, would have to be more sustained and systematic, and that some means of measuring the results so as to represent them in a form comprehensible by the boys would have to be devised. Accordingly the headmaster determined to classify into three groups the influences that a house might bring to bear upon its members, and he adopted a plan of marking that would enable each house to reveal in tangible shape the extent of its influence in these several directions.

The first and foremost sphere of influence was that of "school record," including mainly conduct and diligence in class. The system of marking adopted for this was negative. Adverse marks were recorded by the form-masters for any misdemeanour or slackness in work that attracted their notice to the extent of requiring correction. These "bad" marks were not intended as substitutes for the ordinary means of discipline and punishment, but served principally to record for statistical purposes, so to speak, the number of offences committed. It cannot be objected, therefore, that "weak" methods of government were introduced, and yet as a result of totalling and announcing week by week the marks for each house a perceptible diminution in punishments of all kinds took place. As the term approached its close the weekly totals of adverse marks for each house were combined, and the house reaching the lowest aggregate scored the maximum positive mark (50) for "school record." The positive marks for the other houses were consequently determined by a process of inversion. Thus if the best house had 98 as its aggregate of "bad" marks, it would receive a positive mark of 50, and therefore an aggregate of 134 "bad" marks gained by another house would become $\frac{50 \times 98}{134}$, or 37 in the positive scale. It may be imagined perhaps that such a system of securing good conduct might, because of its precision, tend to prove tyrannical over the abnormal boy constitutionally incapable of continuous "good behaviour." But as a matter of fact, there was scarcely any tendency on the part of house-members to bully their less well-regulated fellows for keeping the house "down," and the danger of developing priggishness was considerably less than by the ordinary practice of commending and rewarding individual merit. This plan provided just the gentle stimulus that disposed the general body of the school to sound consistent effort, without laying undue strain upon any individuals.

The second direction in which the influence of the houses was measured was that of "school *esprit de corps*." Apart from the houses, the school possessed numerous societies open to all, where every aptitude might find opportunities for exercising itself and for enhancing the glory of the school community as a whole. Besides the usual athletic clubs, there were debating, glee, and natural history societies, all offering scope for "social service." Even membership of the library was voluntary, and was counted in this section so that the most bookish child could not complain that he was without his chance. Towards the end of the term each house ascertained how many of its members had been regular and consistent supporters of these school institutions, and the house totalling the greatest number was awarded the maximum mark (30) for "school *esprit de corps*," while the other totals were scaled down in direct proportion. The maximum mark in this sphere was made lower than that assigned to the first, because it was thought desirable to impress upon the minds of the children that the chief element in school work is study. But it would not be difficult to prove, theoretically, that a child attained a higher level of disinterestedness in this second sphere than in the first. There he learnt to subject his personal inclinations to a certain degree of control so as to heighten the reputation of his house, but here he advanced through his loyalty to his house to a devotion to the interests of the wider world of the school.

The third line of action for the houses was in the direction of "group performances" in their corporate capacity. In the preceding provinces, though the ultimate results were social in character, the contributing efforts of individuals also received recognition and acknowledgment. But in this third sphere the houses laboured as units, and in most cases the contributions of participating members towards the result were not separately distinguishable. It was here, therefore, that the child attained the greatest measure of self-effacement. But it was impossible to reflect this aspect of things in the mode of marking, for the co-operative activities of the school consisted principally of organised athletic competitions between teams representing the various houses, and public opinion does not permit the placing of "play" before "work." There were other competitions, however, organised on house lines, such as a "bulb show" in the spring; but inasmuch as athletics predominated in this section, the total of the house gaining the greatest number of points for "group performances" was reduced to 20 as a maximum, and the other scores accordingly.

A final table was then constructed, combining the marks obtained in the three spheres, to discover the "top house" of the term, and the headmaster generally allowed the fortunate one to celebrate its supremacy by an extra half-holiday on the playing-field. The following, though not an actual, is quite a typical table, and shows the victory of an "all-round" house over those that specialise in particular directions to the neglect of other lines of activity.

House	School Record 50	School *Esprit de Corps* 30	Group Performances 20	Final mark
A	47	27	15	**89**
B	31	22	**20**	73
C	37	**30**	18	85
D	**50**	17	11	78

A table of this kind, when published at the end of a term, would indicate pretty clearly to the various house-masters and house-captains what was defective in the organisations under their charge, and would provide them with guidance for taking remedial measures. Occasionally it was found that the same relative positions were maintained by the houses for several terms in succession, but the headmaster always took their respective strengths into consideration when allocating new boys at the beginning of a term, and consequently the chances as to which house would be "top" were generally fairly even.

The value of a system of this character is undoubtedly very great, but it requires a good deal of zealous exertion on the part of the house-masters to make it a thorough success. Artificial incentives help to stimulate social activities to their full vigour among young boys, but the prime necessity is that the teacher himself should participate in such activities even more fully than is requisite in the case of the house-master in a secondary school. The "numerical" element is a valuable adjunct to the system, but the essence lies in the master's devotedness. It may be seriously doubted whether assistant-masters in elementary schools can be expected, in view of the severe drain upon their energy entailed by prevailing conditions, to devote the extra time and labour required to organise and maintain a system of this character. But when the inevitable day comes to reduce the size of classes, to restrict the hours of duty, and to enlarge playgrounds, it may be possible for elementary-school teachers to experiment fruitfully along these lines, and until that time arrives public education will continue to fall far short of its possibilities for the cultivation of true citizenship.

THE REORGANISATION OF HIGHER EDUCATION OF GIRLS IN PRUSSIA.

By Otto Siepmann,
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In the course of August, 1908, a decree was published by the Minister of Education in Prussia, which should not fail to attract the attention of all those who are interested in questions of higher education. The education of girls has been established upon an entirely new basis, and brought into line with that which is given to boys. Experiments have been made for some time past in various German towns—notably at the Mädchengymnasium in Karlsruhe—which have convinced the authorities that it is not only possible to give girls the same classical training as is given to boys, but also to expect an equally high standard in the Abiturienten-Examen (school-leaving examination). The new decree, working upon these conclusions, will establish an entirely new system in Germany. Before considering the results of such a bold experiment upon educational questions in every country, it may be as well to give a short summary of the regulations themselves.

The last occasion on which any decisive reform was made in the education of girls in Germany was in May, 1894. Since then no important alterations have been made; and although the old scheme contained much that was valuable, it was felt to be particularly deficient in its arrangements for the higher education of girls. It is, therefore, the problem of their higher education with which the new regulations especially attempt to deal.

Some few alterations are incidentally being made in the high schools, which it will be well to mention before proceeding to the main subject of the new regulations. The nine years' course established by the decree of 1894 is being abolished in favour of an extended course of ten years. The need for such a reform has been generally felt for some time past, and the decree really does little more in this respect than ratify a change which has been taking place of its own accord. The scheme of instruction in high schools is also being changed in some respects, with the view of emphasising the necessity of training the understanding and the powers of judgment and initiative rather than stimulating the imagination and exciting the emotions. The instruction of mathematics and of foreign languages will be extended in the new system, but instruction in German and divinity will still be, as it always has been, the mainstay of the education of women.

The question of how the education of girls should be carried on when the high-school course has been completed is particularly important and peculiarly difficult to solve. Even a ten years' course at a high school could not be called a liberal education. The training of schoolmistresses was equally neglected; and for those girls who wished for a university career no provision was made. A bold and vigorous attempt is being made to meet each of these three needs. For each a completely new institution is being founded. Those girls who desire a general education will find it in a lycée attached to their high school. For schoolmistresses a special training college with a four years' course is being provided. Girls who are going to the university will pass through a special course of training in a "students' college" or *Studienanstalt*.

The lycée is intended to introduce girls to their duties towards home and society, and to the elements of nursing and housekeeping. No detailed arrangements have been made, but a course of two years will be possible, including compulsory weekly classes in pedagogy. Practical experience will be afforded by a kindergarten, which will in each case be attached to the lycée. Special stress will be laid upon the instruction of domestic economy and of the science and practice of education.

For the past few years there has been growing discontent as to the arrangements for the training of schoolmistresses. By the regulations of January 15th, 1901, the standard of their examination was raised, while the time of preparation for it remained unaltered. The inevitable result was

congestion and overwork. A reduction of the standard is now out of the question; accordingly it was necessary to extend the period of training, as has been done by the new regulations. This extension to a four years' course naturally implies a sacrifice on the part of girls who might have been supporting themselves at an earlier age, and also on the part of their parents. But this is the lesser of two evils. For the excessive strain put upon schoolmistresses was often followed by a physical breakdown; many girls had to take a complete rest for a considerable time, and were therefore prevented from supporting themselves. The sacrifice is, therefore, only apparent; for in many cases their powers of endurance were completely undermined by overwork. There followed an early retirement from the profession, increased expense to the pensions fund, and many social evils which were incomparably greater than that of an extended period of training. The new regulations will, therefore, be welcomed as offering the very necessary relief, without in any way lowering the standard of efficiency. The increased expense of training will be amply repaid by the greater chance of a long and successful career.

In future, the instruction of schoolmistresses will be carried on in training colleges established for the purpose. These may be incorporated in the lycées in order that combination and exchange may be made possible between the two. The course of instruction in the training colleges will consist of three years' training in literary and scientific subjects, and of a fourth practical year, in which experience can be gained in the school with which the college must be connected. In cases where the training college is incorporated in a lycée, the pupils of the two branches might do many lessons together. Similarly an interchange of masters would be possible. This would be an advantage in the initial stages when the number of pupils is small; but it is desirable that the two branches should be kept apart later, when the number of pupils admits of such a separation.

After October, 1908, women will be admitted to Prussian universities. For those who look forward to a university training, an enterprising scheme has been devised. Experience has shown that if a standard is to be reached which corresponds to that of the various kinds of higher schools for boys, a special course of at least six years is absolutely necessary for girls who wish to go to the university. It would be impossible to add this course to the complete training of a high school, since preparation for the university would then occupy a period of fifteen or sixteen years. In order, therefore, that their training may have the necessary unity and harmony, the new regulations admit of an early separation from the high school. The age at which this separation takes place varies between thirteen and fourteen. Those who propose going to the university then enters a "student's college," at which a continuous and regular course of training is provided, which will lead straight on to the university. The preparation of girls for a university career will thus last one year longer than that of boys, though the standard will be the same.

Experiments of this sort have been made in various towns since 1902, and it has been proved that the standard of reform schools for boys can be attained by girls. But the "students' college" will begin its course one or two years later than was done in these experiments. In this way parents will have a longer period in which to come to a definite decision as to whether their daughters shall have an academic training. It is to be hoped that only those who are specially gifted will enter for this course. The arrangement of the lycée, with its free and general education, and the possibility of an early start in life, should prove exceedingly attractive, especially as those mistresses who have been trained in training colleges may continue their education at the university with the view of passing the higher examination.

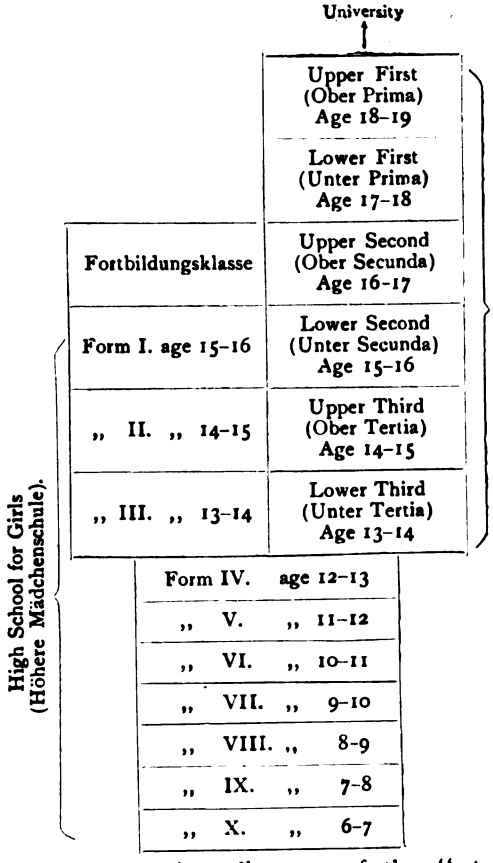
From this short summary of the reform which is now taking place in Prussia, it will be obvious that a step of the highest importance in the history of the education of girls has been taken by the Government. The idea is taken from a few enterprising schools, which have started by themselves the system which is now being established. The Mädchengymnasium at Karlsruhe has proved that girls of nineteen can be brought to the same standard as boys who have passed through a Reformgymnasium, and it is as a result of such experiments as these that the authorities are taking such vigorous action.

It is interesting to know the conditions which have prevailed at Karlsruhe. The Höhere Mädchenschule receives children at the age of six, and provides for a ten years' course through ten forms. After the fourth form the bifurcation sets in (at the age of thirteen). A number of the abler girls enter the Mädchengymnasium, starting in III.β (lower third—unter tertia), where Latin is begun with ten lessons a week; Greek begins in II.β (lower second—unter secunda), and is carried on to the end of I.α (upper first—ober prima): so that girls learn Latin for six and Greek for four years before proceeding to the university. The headmaster and masters are all university men, and only a few lady teachers teach in the Mädchengymnasium. The school hours are nearly all in the morning; on all weekdays there are five lessons in the morning, with a break between every two. The afternoon work amounts to only a few hours a week. Home work takes from one and a half to three hours a day, according to the form and the capacity of the pupil. The tuition fees are about four guineas per annum. Girls in unter tertia cover in one year the same ground in Latin that boys (aged nine to eleven) cover in sexta and quinta in two years. They know the work at least as well as their younger brethren at the Gymnasium.

The time devoted to each subject at the Mädchengymnasium is as follows:

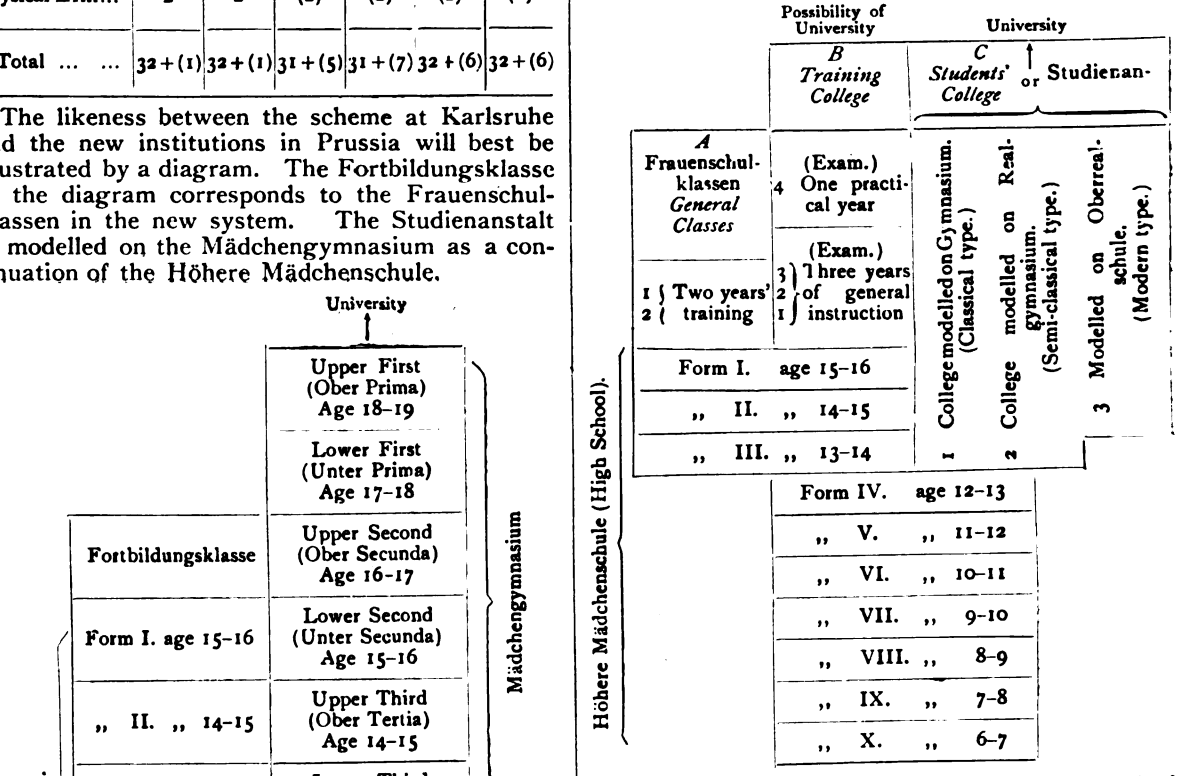
Form	Unter Tertia (Lower Third)	Ober Tertia (Upper Third)	Unter Secunda (Lower Second)	Ober Secunda (Upper Second)	Unter Prima (Lower First)	Ober Prima (Upper First)
Usual age	13–14	14–15	15–16	16–17	17–18	18–19
Divinity	2	2	2	2	2	2
German	3	3	2	2	3	3
French	3	3	2	2	2	2
English	—	—	—	(2)[1]	(1)	(1)
Latin	10	10	8	8	8	8
Greek	—	—	8	8	8	8
History	2	2	3	3	3	3
Geography ...	2	2	—	—	—	—
Mathematics ...	4	4	4	4	4	4
Science	2	2	2	2	2	2
Drawing	2	2	(2)	(2)	(2)	(2)
Singing	(1)	(1)	(1)	(1)	(1)	(1)
Physical Drill...	2	2	(2)	(2)	(2)	(2)
Total	32+(1)	32+(1)	31+(5)	31+(7)	32+(6)	32+(6)

The likeness between the scheme at Karlsruhe and the new institutions in Prussia will best be illustrated by a diagram. The Fortbildungsklasse of the diagram corresponds to the Frauenschulklassen in the new system. The Studienanstalt is modelled on the Mädchengymnasium as a continuation of the Höhere Mädchenschule.



In the following diagram of the "students' college" in the new scheme it will be noticed that any of the three recognised types of higher schools for boys may be adopted as the model of a "students' college." It may be of the classical, semi-classical, or modern type—that is to say, it may be modelled on the Reformgymnasium, Realgymnasium, or Oberrealschule. The adoption of any one of these three types is at the discretion of the municipal authorities. In cases where the classical or semi-classical type is adopted (when Gymnasium or Realgymnasium serves as model), girls will have to leave their high school to enter the students' college after their seventh year of school life, at the age of thirteen. If the students' college is modelled on the modern school (Oberrealschule), it will only begin after the eighth year in a high school.

[1] Figures in brackets represent voluntary subjects.



That is to say, for a girl who has completed the high-school course there are two alternatives:

A. General Classes (Frauenschulklassen). Two years of instruction in nursing, housekeeping, &c.

B. Training College for Mistresses (Lehrerinnenseminar). Three years of literary instruction, closed by an examination, and followed by a practical year, with its examination.

For those going to the university provision is made in:

C. Students' College (Studienanstalt).
Three alternative kinds: (i) classical
(ii) semi-classical.
(These branch from the high school after form IV.)
(iii) modern.
(For this the high school is left after form III., age 14).

It would be tedious to enter here at any great length into the text of the regulations themselves. The position of all masters and mistresses is carefully defined: they are to take positions corresponding to those of masters in the higher

schools for boys. The girls' schools are at the same time recognised as institutions of higher education. These arrangements are intended to keep masters who have been academically trained engaged in their work for the education of women. Under the new system it must be a work which is no less satisfactory in itself than gratifying to those who undertake it.

Perhaps the most valuable part of the new system is the institution of the students' colleges. The new developments in the conditions of life in Germany have brought with them a complete change of standard financially, socially, and educationally. The result is that many girls of the middle and upper classes are unprovided for, and a great deal of feminine vigour is lost by society. The excess of the number of women over men, and the increasing number of bachelors among the upper classes, make it inevitable that many girls of education and standing should have to renounce their natural vocation of wife and mother. It has now been made possible for them to find employment which is not unworthy of their education. Formerly the only career that lay open to them was that of mistress in a high school. There were many to whom such a life was essentially repugnant, and these were then driven by circumstances into a profession which demanded their whole attention, and could no more profit by their assistance than it could give satisfaction to themselves. All this has happily been changed. In future these girls will be able to adopt a profession based upon an academic training by passing through the students' college to the university.

The object of the new system is to satisfy the needs not only of those who go to the university, but of every girl, whatever her vocation may be. It should be possible in future, by a careful selection of one or other of the courses offered, to prepare girls for any position which they may desire to attain. It will be interesting to watch the progress and the success of the new arrangements: they are already full of many valuable suggestions; their practical working may be still more instructive to those who are interested in education in this country.

THE QUALIFICATIONS OF THE TEACHER OF GEOGRAPHY.

By ERNEST YOUNG, B.Sc.
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GEOGRAPHY, after much discussion, having at last taken its proper place amongst that group of school subjects labelled Science, it would seem that the organisation and direction of all the geographical work in the school should properly be left in the hands of the science master. The geography of a country or a region can no longer be taught without some knowledge of and reference to scientific principles. These, in the earliest stages, are generally of so elementary a character, that a teacher unequipped with a purely scientific training is not thereby debarred from dealing with such portions of the subject, provided only that he keep always in mind the fundamental ideas which underlie all science teaching in our time, namely, the deduction from observation and experiment of all facts that can be so obtained, the neglecting of most facts that cannot be so obtained, and the avoidance of mere lecturing. The teacher who gives his pupils a long list of the plants grown in any region, and asks for this list to be learned by heart, belongs to the old order that fortunately is rapidly passing away. He who causes his pupils to deduce these from considerations of the climate and soil of the region studied, and the conditions under which the chief economic plants can be grown, is proceeding upon a scientific method though he might not perhaps call himself a man of science. There seems no reason why any teacher in the school, who possesses the necessary enthusiasm and elasticity, should not be employed in work of this kind.

The greatest difficulty occurs in the practical part of the subject. This includes the reading of meteorological instruments, and the collection of the data upon which an intelligent appreciation of variations in climate can be based; experiments with sundial, sextant, &c., for the determination of the equation of time, latitude, longitude, &c.; some practical acquaintance with methods employed in the construction of maps. Now, simple as some of the instruments are, they are not so simple to those who have had no training whatever in elementary physics. Take, by way of example, the collection of meteorological data. It will be necessary to read at least the maximum and minimum thermometer, the barometer, the wet and dry bulb thermometer, and the rain gauge. It is perhaps as easy for the uninitiated to do this in a wrong as in a right way, and although in the early stages, and with very young pupils, the accuracy of the results obtained is of much less importance than some familiarity with their character, the nature and extent of their variation, and with the instruments by which they are determined, yet we would not willingly see hopelessly inaccurate methods employed by the ignorant.

It has been suggested that the purely practical part of the subject should be left to the science master, while one of the form masters should take the ordinary study of a given region, and that the form master should assume that any necessary physical principles have been taught in the science lessons. To this method of procedure there are sundry very important objections. In some small schools, where only one science master is employed who takes both physics and chemistry, his time is so fully occupied that it would be an absolute impossibility for him to take any part in the teaching of geography. Again, in many girls' schools especially, no physical science at all is taught. Finally, the course in physics and the practical part of the course in geography will not usually follow the same order. Close correlation is impossible.

The physics course in most schools begins with measurements of length, area, and volume, weighing, determination of density. After that there is a certain amount of divergence, but usually Boyle's law will follow, elementary mechanics, and so on to heat. The subject of heat includes the consideration of the various kinds of thermometers and hygrometers. Now in some schools heat is commenced during the second year's course in physics, while in others it forms the main part of the third year's course. Hence, if the consideration of these instruments be delayed until they are studied in the ordinary scientific course, the pupil will be without any practical acquaintance with the scientific principles and instruments necessary for a rational study of the climate of his own or any other region. Besides, the way in which the science teacher deals with a simple thermometer is somewhat different from that adopted by the teacher of geography. The science master sets his class to work actually to make a thermometer and to graduate it. He has to see that they understand why mercury or alcohol is employed as the liquid rather than, say, water. He has to deal with expansion and so on. A great deal of this finds no place in a purely geographical course. If the pupil learns that the variations in the readings of the thermometer indicate variations in temperature, and if he can read them and plot them with fair accuracy, so as to get in graphic form a representation of these variations which will appeal to and impress him, he has done enough at this stage for our purpose. The liquid in the bulb and the method of making the thermometer are here of no concern. It may be pointed out that ultimately the teacher of science reaps the benefit of all this very elementary work that has been done by the teacher of geography.

We must, I think, come at last to the conclusion that as in many schools no physical science is taught, and that as in many other schools the teachers of science are so fully occupied that they cannot find time to render any assistance with this subject, the teaching of even the practical part of geography will have to be left in the hands of form masters, who, in many instances, have had little or no scientific training at all. Some knowledge of elementary physics they must proceed to acquire. The science teacher might lend his aid to his colleagues freely and fully. In the end he gains much. Familiarity with certain instruments that his class must use has been obtained; certain principles have been learned and applied. He will have no need to spend time explaining how to plot curves; for this, too, will have been done for him. Perhaps in all schools the teachers of science could superintend the actual daily reading of the various instruments, while the discussion of the results and their meaning and application could be left to the form master.

Teachers will perhaps not all agree as to the order to be adopted in the practical work. As it is easier to read a thermometer than a sextant, and easier to read a sextant than to make a survey with a prismatic compass, there is some reason for taking the practical work in the following order: meteorology, latitude and longitude, map-making. The attention of all teachers is directed to the valuable "Hints to Meteorological Observers," by W. Marriott (Stanford), 1*s.* 6*d.*; and to "An Introduction to Practical Geography," by A. T. Simmons and H. Richardson (Macmillan), 3*s.* 6*d.*; also published in separate parts as follows: Section I., Maps; Section II., The Globe; Section III., Climate, 1*s.* each.

Perhaps it is too much to ask of the hard-worked assistant, but those who are enthusiastic but otherwise unqualified for duties which they may now have to undertake should read and, if possible, get laboratory or field work in physics, geology, and surveying.

After scientific training, the next important qualification to be desired in the teacher of geography is the art of blackboard drawing. Such drawings need not be of a highly artistic character. Outline maps on black cloth are fairly common and cheap, so that many of the outlines need not be drawn. But the teacher who wishes to show the distribution of chalk, limestone, and other rocks in England will more easily obtain attention and retention on the part of his class by the use of coloured chalks on a previously clean black surface, and then by subsequent reference to an orographical map, than he will by reference to the map alone. The same remark applies to the distribution of manufactures, animals, and vegetation.

Closely connected with the art of drawing for geographical purposes is that of photography. Lantern-slides of special diagrams and maps are often wanted and cannot be bought. Views of land forms from the neighbourhood are necessary. A view of one's own cliffs or one's own railway cutting is more real and more useful than the most picturesque view of the same forms from other lands, though these are not to be neglected. It will rarely happen that the view that is just the one wanted will be obtainable from the local or any other photographer.

The geographical teacher must be a wide reader of geographical literature. It would be well if he could see the *Journal* of the Royal Geographical Society month by month, and it is perhaps unnecessary to say that he ought to be a member of the Geographical Association. In London this is particularly the case, as in this way he has the privilege of attending courses of lectures upon various aspects of his subject given by the most competent of those who have made geography a lifelong study.

I pass over those moral and mental qualifications which ought to be the common possession of every teacher, no matter what subject he teaches—earnestness, enthusiasm and devotion, patience, power to describe and to explain with lucidity, ability to awaken and sustain interest, and disciplinary power of no mean order. But I would urge that the teacher of geography should

possess in a pre-eminent degree the gift of originality. He should keep the keenest look-out for the possibility of making his subject useful and used. Work in many branches of study is now, for school purposes, more or less stereotyped. There is a fairly distinct and well-recognised method of dealing with mathematics, science, and modern languages. They have been so much discussed of recent years that one can hardly go far wrong unless afflicted with more than average human stupidity. This is not the case with geography at present. Much experimenting is necessary. As examples of how the teacher's originality may show itself, I give the following forms of exercise and illustration that have recently come under my notice.

1. One teacher has set his class to illustrate their note-books with cuttings from magazines, travel advertisements, and picture postcards. The note-books are not mere scrap-books where any picture, no matter what it may be, finds a place. They contain a carefully arranged series of home-work exercises forming a *résumé* of the year's work with maps, charts, diagrams, and pictures which add a reality to these notes that could not possibly have been gained in any other way.

2. By arrangement with the teacher of history, maps of the region studied geographically (in this case Europe and the British Isles) have been used during the study of history and *vice versa*.

3. The same plan has been followed in the literature lessons. Marmion's wanderings have been dealt with geographically. The lesson was a useful revision exercise for the classes both in literature and geography.

4. In Simmons and Richardson's "Practical Geography" there are some exceedingly interesting geographical exercises based on quotations from various poems. These will suggest at once other similar exercises connected with the work in literature. In fact, literary quotations might almost serve the same purpose as the pictures mentioned above.

5. In L'Estrange's "Course of Comparative Geography" (Philip) there are many questions based on an examination of given pictures. Such questions applied to Underwood's stereoscopic views would have even more value.

6. When the newspapers are full of any event that has geographical significance, a map of the region is hung in a convenient place, and a cutting from a daily paper is placed beside it.

Nature Study made Easy. By Edward B. Shallow and Winifred T. Cullen. xi+136 pp. (The Macmillan Co.) 2*s*. net.—The title describes very accurately the contents of this book—reading lessons, mostly of the sentimental type, each followed by a pretty little poem, and at the end of the book notes of a dozen additional lessons of no particular originality, although we are assured in the preface that they are "given according to the most approved method." The book is intended for classes of children of ten or eleven years of age. It is printed, bound, and illustrated in very attractive style.

A SIMPLE COURSE OF PRACTICAL PHYSICS.

By W. H. SALMON, B.A., B.Sc.

A RECENT article in THE SCHOOL WORLD (August, 1908) on "The Correlation of Work in Mathematics and Physics" has indicated the line of cleavage which is the logical outcome of the modern movement in the direction of practical mathematics. The writer of that article has shown that fundamental measurements hitherto made in the physical laboratory may now be more appropriately passed over to the mathematical class-room, while the experiments involving the use of liquids, &c., may be retained in the physical laboratory. Many schools, however, possess only the rudiments of a physical laboratory, and it is the purpose of this article to show how with limited accommodation and funds, and by means of "home-made" apparatus, it is possible to work through a course in practical physics on the lines suggested in the above article.

SPECIFIC GRAVITY, &C.—The principles of flotation and specific gravity can be illustrated by very simple apparatus. A set of weights (to milligrams), a measuring glass, two or three wooden cubes, part of a centimetre scale, a small screw hook, a needle, and a jar of water are all that is necessary.

A scale of millimetres should be marked on an edge of one of the cubes in indian ink; this cube can then serve as a hydrometer. A preliminary experiment to find the specific gravity of the cube should be made by finding the depth to which it sinks in water; let this be repeated several times to ensure as accurate a result as possible. It will now be possible by means of the needle and short centimetre scale to find specific gravities free from the inaccuracy due to the surface tension of the water. Heat the head of the needle in a flame, and fix it lengthwise in the short edge of the scale; if this be thrust vertically into the upper edge of the cube, the additional depth to which this sinks in water under an added weight can be read against a straight edge placed across the mouth of the jar. Hence

(1) The specific gravity of a solid heavier than water can be found by noting the additional depth to which the cube sinks in water when the solid is placed on it, and determining its volume by immersion in water in the measuring glass. Or,

(2) The specific gravity of a solid heavier than water can be found from its weight in air and weight in water. These may be determined without a balance by fixing the screw hook to the lowest face of the cube in water, and finding what weights are necessary to sink it to the same depth as the solid in air and in water respectively.

(3) The specific gravity of a solid lighter than water may be found by a method similar to (1).

(4) The specific gravity of liquids may also be found by means of this apparatus, or by means of the measuring glass.

Other exercises will suggest themselves to the teacher; for example, the principle of Archimedes

can be verified with this apparatus. No balance is necessary, and thus an expensive item is avoided. In order to get as good results as possible, the cubes should be accurately finished and of a fair size. A very good set of a dozen 3-in. cubes can be obtained from Messrs. Griffin and Co., Kingsway, W.C., for 5*s.* 6*d.*

Heat.—Should a thermometer and a balance be contained in the laboratory equipment, the course can be extended to include some experiments in calorimetry without further outlay. Two or three tins or canisters will serve the purpose of calorimeters; and it will be found that if the initial temperatures and masses be judiciously chosen, the loss of heat from radiation will not materially affect the results. Experiments on the law of mixtures, the water equivalent of the vessel, specific heat, and heat of fusion can all be performed with this apparatus. (In the case of the last experiment the ice should be ground into very small pieces; otherwise the radiation which takes place while the ice is melting will be considerable.)

The course might appropriately conclude with a few observations on capillarity and surface tension, though this subject is not usually included in a school syllabus. A drop of water on a piece of dry flannel, a drop of oil of turpentine in water, the immersion in water of capillary tubes of different bore will illustrate these properties.

SOME IMPRESSIONS OF THE INTERNATIONAL MORAL EDUCATION CONGRESS.

By Prof. John William Adamson.

THE most impressive aspect of the recent Congress was without doubt its admirable temper, its willingness to listen with patience and sympathy to the expression of the most diverse opinions, even upon fundamentals. The spirit of the gathering was revealed almost at the beginning of its proceedings by M. Ferdinand Buisson in the impassioned yet restrained speech with which he charmed the public meeting on the first of the four days of the Congress. It was not, said M. Buisson, the aim of this international assembly to discover some common formula which might serve as a panacea of universal application, a sort of *pédagogie omnibus*; on the contrary, the Congress realised that liberty involved the absence of uniformity, and "liberty is life." While recognising their differences, the members were prepared to discuss these in a manner at once frank and considerate. The last two speeches delivered in the Congress testified that this atmosphere of controversy without bitterness was preserved to the end. "What have we learned?" asked M. Émile Boutroux, whose words brought the Congress to a close. "We have learned toleration. Yes, but that may be but a small thing. We have learned what is better, to respect one another; best of all, we have learned to sympathise."

As was to be expected, the greatest divergence of opinion was evident in the session devoted to the relation of religious to moral education. The entire frankness of the debate, combined with the desire to be fair to opponents, was a noticeable feature of a discussion shared by Churchman and Nonconformist, Jesuit and Positivist. Its effect upon all who participated in it can only have been for good; but its frankness and consideration were perhaps not its most important characters. There were those present whose hopes centred upon the feasibility of a synthesis of the religious and the purely moral bases of education, and some of these saw signs of such a possibility within the Congress itself. As Prof. Muirhead pointed out, both schools appreciate the spiritual in man, so that while "an uncriticised religion is not worth having," we cannot rest content with "a so-called completely secular education." "Let us act when we can act together," said the Bishop of Southwark; "our common ground becomes more and more evident when we confer." Amongst minor points of interest in this particular session was the insistence on the part of the speakers from France that the public school, being the school of the majority, must be neither religious nor irreligious, but neutral. A Japanese speaker maintained, contrary to a common Western opinion, that the educational system of his country rests on a distinctly religious foundation, namely, the worship of ancestors and the cult of the Imperial House.

A synthesis between the principles of direct and indirect moral instruction would seem more easily obtainable than a like amalgamation of religious and ethical education. One cannot but feel that the opposing camps, as represented elsewhere in recent controversies, move in a region somewhat abstract, where direct moral instruction is limited to ideas which do not and cannot influence conduct, and where habits and activities are trained with never a reflex effect on thought. Most speakers and writers at the Congress concentrated attention on the position occupied by the will in all moral instruction. "All learning," as one of them said, "is completed in a series of acts of the will," and the task of the educator is greatly concerned with making opportunities by which the individual may render social service, and in so doing develop morally. Prof. Mackenzie, in another connection, put the difference between two types of instruction thus. There are good and bad reasons for giving Biblical moral instruction. The men of the Bible are moral geniuses, who breathe a spiritual atmosphere; instruction given in the light of this fact is well grounded. But we tend to think in water-tight compartments, and the Bible compartment is thought to be peculiarly moral; this is a bad reason for such instruction. The Bible carries conviction because it works on pedagogical lines by present-

ing concrete situations; the French advocates of moral instruction, well aware of the advantage so secured, again and again repudiated the charge that their teaching was abstract, dry, dead. But whether we take the direct or the indirect way with children, the Congress appeared to agree that direct ethical teaching must be given to our future teachers. This was the plea made by Mrs. Mackenzie, and it was supported by Prof. Muirhead, who thought that the duty of giving such teaching was incumbent upon the universities, as the residuary legatees of the churches.

Though the lines of division within the Congress were deeply marked, centres of agreement were no less obvious. It was everywhere admitted that the field of moral education is the whole man, and not some one definite area of faculties or capacities, that in fact "moral education" is just "education," *tout court*. Hence, the moral education with which the Congress was busied is by no means a purely scholastic thing. Speaker after speaker emphasised the social and economic factors which necessarily enter into the process. It is by giving service to a community that the individual grows in moral stature; on the other hand, there can be no improvement in public education apart from a juster sense in the public of what constitutes value and is therefore worth sacrifices. The success of the school is conditioned by the home-life of the pupils, and in the case of the rich this home-life too frequently does not exist, or is trivial or unstable. At the other extreme of the social scale, there is the "slum-school," with its saddening conditions, which give point to the fact that the virtue most often named throughout the meetings was Justice, a word which never failed to be acclaimed as it fell from the orator's lips. Yet another adverse condition, from which the popular schools of most countries suffer, is the class whose numbers are so many that the teacher finds it impossible to get into touch with them individually, and, in consequence, much of the work both of instruction and education is crippled, curtailed or nullified.

A recurrent phrase in the speeches and in the published volume of "Papers" is, "the personality of the teacher." The words, whether expressed in English, French or German, always conveyed the belief that, in the last resort, it is the character of the teachers and the spirit in which they occupy schools and class-rooms which determine the efficacy of educational schemes, courses and methods. How are men and women of the right personality to be found and retained in the public service? The Congress, or rather certain of its members, did not go beyond the recommendation of adequate salaries and reasonable freedom from pecuniary worries. The advice is sound and timely, and its adoption would only be fair to the workers and in the interest of the paymasters. But apostolic fervour and missionary zeal are not invariably secured by the offer of a high salary. It is possible that the man whose personality fits him to be an educator may value very highly other things besides or even in place of money, as, for instance, a sphere of congenial work in which he is honourably maintained, or freedom from the worry inseparable from codes, regulations and meticulous officials. As things are to-day, it is perhaps easier to increase the teacher's pay than to ensure him the liberty to be a person—in which case, discussion of the teacher's personality threatens to become rather unreal. But some noteworthy things were uttered on the subject. Prof. Adler thought that the worst of all educators was he who "practised what he preached," the best educator being the man who is ever striving after an ideal which is beyond and above his imperfect accomplishment, whose position is understood and appreciated by pupils who try to reproduce it in themselves. "We can only teach what we *are*," said Mr. John Russell, pleading for sincerity in a speech whose memorable illustration of that virtue none who heard it is likely to forget. "A teacher giving instruction according to a syllabus in which he does not believe," said the veteran Allanson Picton, "is a source of national corruption."

The virtues and defects of the English public school were set before the Congress in terms with which we are all familiar, but a question raised incidentally by Sir Arthur Hort lent fresh zest to the topic. How is it that the public-school boy, who learns so well the lesson that the individual must subordinate himself to the community, fails on reaching manhood to practise that lesson in its application to the life of the town or city in which he lives? How is it that the boy who plays "for his side" fails as a man in civic virtue? None who took part in the little debate questioned the fact, and all were ready to throw the responsibility for it on the school. But surely this was to ignore a truth to which many references were made throughout the Congress. The boy is not only a member of such and such a school; it is more germane to the point to remember that he is the son of such and such parents moving in such and such social circles, imbibing the current ideals, prejudices and so on, of the men and women amongst whom their life is chiefly spent. If these men and women have replaced a vigorous sense of public duty by a restless craving for amusement, the public school has but a small chance of restoring their offspring to a more self-denying type of life. The failure, however, was attributed to the schools by the two speakers who essayed to answer Sir Arthur's question. The boys, said Dr. Hayward, are without unifying principles of conduct, and are abandoned too much to an intellectual regimen which is mainly formal. The public schools, said Mr. G. L. Bruce, are too exclusive, their social ideals are those of a mere caste. Mr. Bruce went on to show that this is a defect by no means limited to the schools in question, and he suggested that in the general interest the claim to select their pupils made by

schools of all types and every social standing should be resisted. Perhaps it is symptomatic of this desire for exclusiveness that so many of the English teachers who addressed the Congress assumed that all children attending secondary schools come from well-conducted homes, whose influence makes for moral and intellectual worth, whilst all elementary-school children are drawn from immoral, unintellectual and squalid homes, whose influence is counter to that of the school. Whatever the explanation, it is to be regretted that such an absurd travesty of fact made its appearance so often. Every social class has its typical vices and virtues; but neither Vice nor Virtue is the exclusive property of any one of them.

It is impossible within the limits of an article merely to mention all the topics of professional interest which received attention during the eleven or twelve meetings, general and sectional. The scope and character of the whole are well reflected in the officially edited "Papers on Moral Education communicated to the First International Moral Education Congress," of which Mr. David Nutt is the publisher. But a few subjects of more especial interest to teachers may receive a brief allusion. Co-education proved to be something of a burning question; there was not time to thresh it out, and it is impossible to say whether the balance of opinion was favourable or the contrary, as the Congress passed no resolutions except in its "business meeting." But it was clear that both advocates and opponents felt strongly on the subject.

"Reward and Punishment" was another attractive matter for discussion. The Latin and the Germanic peoples seem to be opposed temperamentally in the views which they respectively take concerning the place that punishment ought to occupy in education. While this divergence came out in the papers contributed and in the actual debate, both parties seemed to agree with Prof. Münch that rewards are not the true educational correlatives of punishments, and that the educator does well to dispense with them.

The international character of the sessions was well maintained as a rule, but the Saturday afternoon meeting, which considered the "Problems of Moral Instruction," was more British in scope and character than the rest. In the absence of one of the protagonists, the anticipated conflict between suggestion and direct instruction proved to be a mere skirmish, which gave place to a consideration of the value of different studies as instruments of moral development. Some of those who dealt with the curriculum in detail inclined to the belief that all studies possess value from the moral point of view. While this is true in a broad sense, the belief too easily passes into the thesis that all the values are equal, when it proves too much, since it means that studies are indifferent. This ignoring of the claims of positive, logically articulated knowledge is apt to end in a double failure; he who puts moral instruction before chemistry in a chemistry lesson is likely to teach feeble morals and very little chemistry. A similar desire to be "moral" at all costs lay at the back of the plea, urged on the Congress by a greatly respected historian, that history as taught in schools should not foster hero-worship. It may be morally dangerous to arouse in boys or girls an admiration for Julius Caesar or Napoleon; it is certainly dangerous to encourage children to pass wholesale condemnation upon the acts and lives of such men. To drop their names and deeds from the history lesson would accordingly seem to be neither morals nor history. The truer attitude for children in this connection is surely that which Miss von Wyss claimed as one of the benefits conferred by nature-study, namely, "suspense of judgment." This lady's speech, quietly and very effectively delivered, contained a plea for such a study of plant-life and the mode of its propagation as would serve as a preparation for understanding the significance of sex. She urged that in nature-study teachers had a means of conveying this knowledge in a manner at once natural and devoid of all prurient suggestion, and that upon knowledge so gained parents might at a later time safely build. The difficult subject here touched upon has been matter of debate for some time past amongst German schoolmen; those of them who were present no doubt recognised in the speech a serious contribution towards solving the problem of *die Aufklärung*, as they have named it.

While fully admitting the ethical importance of curriculum, method and the activities of the schoolroom generally, the Congress was very ready to consider these in their relation to the world beyond the class-room. An attempt to follow the ramifications so revealed would take one far afield, and yet fail to present them to the reader with the succinctness of the published "Papers." One or two points may, however; be touched upon. The audience sympathised with the speaker who defied Herbert Spencer and asserted that Art is by no means the concern of leisure moments only. "The poorer the district, the more beautiful the school and schoolrooms" was the concrete assertion of the belief that beauty should be the silent daily and hourly teacher of children. A still more definite form of it was described in Miss Higgs's account of the children's guild at Oldham, whose members bind themselves by the undertaking, "I promise to do all that I can to make my school, my home and my town beautiful." Herr Wolgast made a particularly valuable contribution to the consideration of children's home-reading, which he further illustrated by a collection of books. His suggestion for undermining the "penny dreadful" is probably novel. The delight which boys find in stories of Red Indians, brigands and detectives is a natural expression of the primitive man within them. It is, therefore, not to be ruthlessly scotched, but should be stimulated in some healthier fashion, as, for example, by an

active outdoor life and by exploration of all places in the boy's neighbourhood which promise adventures. These recommendations indicate the difficulties of the German situation, the absence of such books as Henty's, and the more sedentary life of German boys who live in towns. On the other hand, Mrs. Humphry Ward made it clear that some English cities lose enormously by failing to provide supervision of elementary-school playgrounds out of school hours. In the absence of control, these too often become the scene of mischief and of moral and physical injury to the young children who frequent them. Mrs. Ward pleaded for the employment of games' masters or mistresses in order to make the most of the playgrounds; the suggestion was not brought before the Congress that what these schools want is playing-fields, not asphalted "yards."

The official languages of the Congress were English, French and German, and any one of these was as often heard as either of the others. But the palm for speaking unquestionably belonged to the French delegates. Readiness and wit, clarity of thought and expression unclouded by the passion which usually glowed beneath it, marked their speeches as a whole. Those who were privileged to hear M. Buisson at the public meeting will long remember an allocution delivered (as Prof. Sadler said) "with the grace of an orator and the instinct of a great language."

Yet the dramatic moments of the Congress were not associated with the French. Perhaps the most impressive of these episodes was Mr. John Russell's frank, deliberate and eloquent statement of the rationalist's position respecting the relation between religion and morals. Of another kind was the vigorous indictment by Mrs. Ginever of the "Society lady's" craving for excitement which to-day demoralises so many children of the wealthy classes. Even these two striking speakers may linger less long in the memory of some than the Polish lady whose aspiration was for "the school of the future, founded on liberty and fraternity," such a school as is not often found at present in her fatherland, in bondage to three Governments, and sometimes suffering persecutions "as demoralising to the oppressors as to the oppressed."

Beyond the interest of the moment inseparable from a cosmopolitan gathering of which many distinguished persons were active participants, what has the Congress accomplished? A concrete answer lies in the handsome volume of "Papers," which is a mine whence the parent, teacher and educational administrator may extract more than sufficient material for application to practice between the present and the next Congress four years hence. But there is more than this. The Congress has secured a fair hearing for conflicting views on a subject which lies at the heart of national life everywhere at this moment as perhaps never before. Too often those who hold these conflicting views are content to regard their differences as irreconcilable. But this Congress has shown them that they have common aims, that in some things they may undertake united action, and that even the ultimate hope of a synthesis need not be abandoned by all schools of opinion. If this temper and these hopes become the tradition of the future Congresses, then it is not possible to exaggerate the value, to all the nations which shared in them, of those four September days.

THE TEACHING OF MORALS.[1]

THE question "Is virtue teachable?" is as old as Socrates. The answer that Socrates gave to it rather stimulates than answers inquiry. "Some things," he says, "I have said of which I am not altogether confident. But that we shall be better and braver and less helpless if we think that we ought to inquire, than we should have been if we indulged in the idle fancy that there was no knowing and no use in searching after what we do not know; that is a theme upon which I am ready to fight, in word and deed, to the utmost of my power." Prof. Sadler's world-wide inquiry is no more definite in its conclusions than the dialogue of Socrates with Meno, but he is "better and braver and less helpless" for having undertaken it, and we are "better and braver and less helpless" for following out the inquiry with him.

The positive conclusions are easily summarised and disappointingly commonplace:

> There is in every country an ideal of personal and civic obligation which may be taken as a basis for school teaching by adherents of almost every school of thought. This greatest common measure of agreement may form an important constituent of moral instruction in the national schools, but cannot rightly be employed by the State as if it were the sole foundation of morality.

We take this to mean that the ultimate sanction is to be found in religion, and apart from this foundation it is impossible to erect the structure of moral training. The experience of France, which is described in six different reports, abundantly confirms this inference. The Council might have seen the way to some more explicit affirmation, had it not only compiled reports of Germany and France, but taken what is obviously the next step of putting those reports side by side and drawing conclusions from the comparison. In Germany there is practically no moral instruction as such. It is part and parcel of the religious instruction; it is *sittlich-religiös*. France since 1882 has had an elaborate syllabus of moral lessons in all grades of schools. There are four lessons a week, and the teaching of literature,

[1] "Moral Instruction and Training in Schools: Report of an International Inquiry." Edited by Prof. M. E. Sadler. Vol. i., lviii+538 pp.; vol. ii., xxii+378 pp. (Longmans.) 5s. per vol.
"Papers on Moral Education." Communicated to the first International Moral Education Congress. Edited by Gustav Spiller. xxx+404 pp. (David Nutt.) 5s. net.

history, and geography has also official instructions to be "moral." Which of these two nations shows stronger evidence of moral fibre and moral health? Which literature is the sweeter and the nobler? Which has the greater moral earnestness, the higher moral achievement? There cannot be a moment's doubt as to the answer. It is writ large on the history of the past generation. Neither is the history of the coming generation likely to show much improvement on the present lines, if the experience of the French teacher quoted by Mr. Harrold Johnson is in reality typical, "My prizeman in morals is the biggest knave of the lot."

This is, of course, the experience of an individual teacher, but a careful perusal of the six reports on moral instruction in France yields nothing of a positive nature on the other side. In the girls' schools, perhaps, some real moral result is secured; girls are more accessible and plastic; but looking at the results as a whole, and especially at the statistics of juvenile criminality, which show a threefold increase in the last fifty years, the net outcome is failure. Morality cannot be taught, like Esperanto, in a course of thirty-five lessons. One may teach children to write essays about it, to argue about it like young sophists, and to repeat by heart the most beautifully worded *résumés* of moral lessons, but these things, though they fill the mind, do not form character, nor mould the will, nor determine the affections towards God and His perfect will. *Ubi fides, lux: ubi fides, robur*—"Where there is faith, there is illumination of mind and strength of will." Without faith there can be no reverence, and the endeavour of the French teachers to dispense with faith and build up character on a "sociological conscience" may be, as Mr. Harrold Johnson thinks, heroic, but it is not a success. "The child cannot possibly be trained for life by mere negations with regard to the unseen world," says Dr. Paton; and how one wishes that the Advisory Council, with its collective wisdom, had had the courage to adopt that conclusion for its own.

As it is, the report leaves us precisely where it found us. There is a mine of interesting information, but there is no positive outcome of it all, no definite lead, no solution to our problem except the old one: *Au fond il s'enseigne lui-même*—"The ultimate lesson which a man teaches is himself." If the teacher is not a moral personality, instinct with the love of goodness and the loathing of all that is vile, no moral text-book and no moral lecturing, however eloquent, will produce other than an immoral effect.

There are, however, certain positive conclusions which, though not new, may be heartily endorsed and may well bear repetition. Healthy physical conditions, light, air, suitable diet, easy clothing, and plenty of sleep and exercise, all these things are conducive to moral health. Organised games teach many valuable social qualities and keep the corporate life of a school fresh and wholesome. The system of self-government by prefects or monitors trains through responsibility to moral thoughtfulness and leadership. There is still a need in many of our schools for systematic instruction in civics, in the working of our social and industrial organisation, and in personal hygiene.

One further point remains, a point of cardinal importance, which Prof. Sadler brings out at the end of his presidential address delivered to the Congress. Many writers and speakers have directed attention to the waste of intellectual education which results from children leaving school at the age of thirteen and failing to keep touch with any continuative educational influences. But the waste is not only an intellectual waste; it is a waste of the most valuable of all products, a waste of character. In former times the workshop afforded a certain measure of education; now that industry is organised on such a vast scale a boy or girl of fourteen in the mill is merely an adjunct to a machine, one pawn in the great army. The continuation school of the great majority, certainly of two-thirds of our children in the United Kingdom, is the street; and the next step for our country in educational advance is to substitute the education of the evening school for the education of the streets. The State has already assumed the wardship of youth until the age of thirteen or fourteen; the term has now come for it to extend the period of tutelage until seventeen or eighteen. As it is, the State steps in to protect youths between fourteen and eighteen from overtime in factories; we are feeling our way now towards a more positive assertion of the duty of the community to safeguard the life of its young people. If the Moral Education Congress can bring that lesson home to the minds of thinking men and women, and politicians (not all of whom are included in this description), it will have done more than any syllabus of moral instruction can do, however elaborate and complete, for the moral progress of the country.

The "Papers on Moral Education" cover much the same ground as the two volumes of inquiry, but they include some fresh and inspiring personalities of almost all nations, whose contributions are admirably brief and clear. It is said that Mr. Leslie Stephen sent round by way of instruction to his various writers for the "Dictionary of National Biography" the words, "No flowers, by request." Dr. Gustav Spiller seems to have done the same; at any rate, he has secured the same admirable result.

Guide Illustré de l'Étudiant Étranger à Paris et en France. Par G. Duflot. 303 pp. (Librairie Larousse.) 1 fr. 50.—This is the thirteenth annual issue of a very convenient guide, in four sections (Facultés de Paris, Grandes Écoles et Institutions Libres, Cours dans les Départements, Renseignements Généraux). Some seventy-five pages are devoted to the courses of the Alliance Française, rather a liberal allowance if we compare the sixty pages given to fourteen provincial courses. A number of illustrations are added. The foreign student will find the book very useful.

THE DOGMA OF FORMAL OR FACULTY TRAINING, AND ITS DOWNFALL.

By Dr. F. H. HAYWARD.

AT the recent International Moral Education Congress, Sir Arthur Hort, of Harrow School, asked the important question why "the sense of corporate life once gained in a miniature society did not more often develop into patriotism and similar virtues?" It is by no means certain that the reply which I ventured to give on that occasion was altogether sound or adequate; but until a better is forthcoming I propose to repeat, emphasise, and elucidate it, and, in the interests of educational thought, to invite criticism.

The dogma of "formal training" or "faculty training" has been gravely suspect in this country ever since Prof. Adams wrote the fifth chapter of his "Herbartian Psychology." Or rather, it *should* have been gravely suspect; but in point of fact the dogma is now as much alive as ever: it is on the lips of almost every teacher: it is proclaimed from almost every educational platform. The evidence in its favour seems to me to be *nil*; the evidence accumulated against it, and chiefly to be found in American educational works and in occasional *naïve* and unintentional confessions by English schoolmasters, is almost overwhelming. I propose to set some of it forth.

But what is this powerful and yet gravely suspect dogma? It is the creed of every teacher who speaks of cultivating the "powers of observation" of a boy; of every teacher who speaks of "cultivating" reason, or thought, or intelligence; of every teacher who speaks of cultivating accuracy, or exactness, or neatness, or thoroughness, or concentration; of every teacher who praises either the drudgery of Latin or the struggles of the playing-field as cultivating effort, or will, or strong character. In other words, this dogma is the creed of almost every teacher in England—perhaps our infant-school teachers constitute the only considerable body of dissentients. Yes, though it is rarely held in a perfectly "pure" form, and is most commonly blended with some other creed, utilitarian, sectarian, Herbartian, or other, "formal training" or "faculty training" is the sacred creed of the English school. Teachers of classics, disciples of Prof. Armstrong, followers of Mr. J. L. Paton; secondary and primary-schoolmasters, secondary- and primary-schoolmistresses; men and women of high intelligence and character, men and women who are stupid and selfish to the core of their being—all unite in allegiance to the dogma of "formal training."

A century ago Hazlitt was attacking Spurzheim's phrenological scheme of faculties; later came Herbart's attack; and now in the pedagogical literature of the present day the warfare is renewed. Indeed, the "faculty doctrine" is ever drawing education again and again into its fatal embraces; for what is easier and more natural, when education has taken a false or unsuccessful line, to emphasise that another faculty needs cultivation, be it observation, or reason, or exactness, or imagination, or will? The "faculty doctrine" contains in itself not only the fatal microbe of eternal failure but the germs of recurrent resurrection.

It is time to turn to details; and I propose, in the first instance, to discuss the faculty doctrine as applied to *will*. In our secondary schools this "faculty" is under special patronage, while observation, imagination, and memory are, I believe, regarded as lacking in the full measure of respectability.

It is, however, usually described under another name than "will"; and as the word "faculty" itself has begun to acquire certain suggestions of decrepitude, we most commonly hear, not of "cultivating the will-faculty," but of "calling forth effort," or, in Mr. Paton's words, of inducing a boy to "set his face like a flint" against his inborn laziness. Algebra and Latin grammar are a "fine mental gymnastic"; they brace up the whole nature; they form character; the very drudgery they involve is wholesome for the soul. When I say that this doctrine is proclaimed or echoed by almost every public-school master in England, the reader will recognise the importance of the statement that it is a doctrine probably false both to psychology and to ethics. For the truth seems to be that any act of will performed without a certain measure of appreciation, enthusiasm, or the like—without "apperceptive interest" of some kind—has no character-building function at all. If drudgery—pure, unillumined drudgery—were morally valuable, the blacks of the days of slavery received an education of the highest value. Their wills were trained; they had to "set their faces like a flint." This surely is nonsense. The effort that "trains" is never pure drudgery; it is drudgery endured for the sake of some end that seems to the soul desirable. Consequently, if Latin verbs or algebraic factors appear as "tommy-rot" to any pupil in an English public school, he is not receiving any "training in effort"; he is only being transformed into a slave or a cynic to whom "swotting" is abhorrent.

"The will," said Quick years ago, "takes its direction from our interests." "Man is strong in proportion to the strength of his interests." "Effort" put forth in some noble cause or some excellent pursuit certainly "trains the will"; no other kind is of value. *There is not the least evidence that any will has ever been strengthened, or trained, or fortified by drudgery; that Darwin, for example, was ever better for the classical grind that he abhorred; that any child is ever better for parsing and analysis, unless he see meaning and value in these things.* Indeed, one may go further and say that task-work is always degrading and morally harmful, and a positive prostitution of human life. Going further yet, one may remind the advocates of "formal training" that effort, perseverance, and will-power are not the monopoly of the good man; Edmund and Iago possessed them to the full; consequently, even if "formal training" is successful in "bracing

up" the will, no moral purpose has been necessarily effected.

The case of school games is very similar. Subordination, partnership, and leadership are not necessarily moral qualities; brigands often manifest them in high degree. The will is, however, *trained* (after a fashion) in the case of games, for there is present an element of *interest*; the boy knows what he is driving at, which is not always the case when engaged with his Latin or algebra. I do not doubt, therefore, that if an element of moral insight or apperception were so woven in to the practice of games that their analogy (poor though it is) to modern life as a whole were made manifest, the educational value of games would be considerable. Not *blind* subordination, not *blind* partnership, not *blind* leadership will accomplish this, however, and the confession of Sir Arthur Hort indicates the limitations of any such training. What will accomplish it I can scarcely state with any precision beyond emphasising the factor of insight. I certainly distrust that public-school attitude which allows a dignified moral terminology to die through absence of use, with the result that the terminology of the playing-fields has to be employed whenever a really telling exhortation is to be made. Those who object to words like "justice" as savouring of "priggishness" have to fall back upon phrases like "playing the game," or appeals to "sportsmanlike" instincts. To such a pass has the "faculty doctrine" led us!

To sum up this discussion on the will. We have no right to "train the will" at all unless we ensure that the direction of the will's activity is good. *Will-training in the abstract is probably impossible; the will is no stronger, in general, after a resolute effort than before, though it is stronger along a certain line. Indissolubly connected with all will-training should be the factor of insight.* And insight, I imagine, involves *instruction*. If, however, the secondary-school teacher fight shy of the latter word, especially in connection with "morals," he is at liberty to invent or employ any other word that he may prefer —*e.g.*, *"suggestion"*—and, with regard to his method, to adopt either an organised series of talks, or of literary readings, or of debates, or of sermons, or of conundrums, or whatever device, sober or outlandish, he may find most congenial to himself or his pupils. The one thing he has no right to do is to "train the wills" of his pupils without ensuring that those wills are also enlightened or set on the path of enlightenment.

The next "faculty" to consider is that of *observation*. Probably even more nonsense is talked here than in connection with will. The notion is abroad that by means of object lessons, science lessons, and the like, we can sharpen and strengthen the "faculty of observation" until each of our pupils becomes a replica of Sherlock Holmes. "Mere knowledge" is unimportant; "mere facts" are taboo; but an "observant mind" is above all price.

The lurking fallacies of this mode of speech were exposed in the chapter of Prof. Adams's book to which I have already referred. In the first place, is it a *good* thing to be "*generally* observant"? Do we need to gape at everything around us? Is observation a good thing in the abstract or in itself? Surely we should never make an inch of rational progress if we were "observant" in this sense.

In the second place, is it a *possible* thing to be "*generally* observant"? Does not genuine and intelligent observation follow knowledge? Do we not observe things that interest us, that is, things the significance of which we can apperceive? Is any other kind of observation really worthy of the name? And does not all genuine observation imply non-observation?

Observation, in short, is no faculty at all; it is a way in which our minds act; and this way is determined largely by our existent knowledge, insight, or ideas. Thus, as with the will faculty, we are educationally driven back to the question, "What kind of ideas are we supplying to our pupils?" For it is these ideas—not some abstract and quite non-moral power of observation —that are important. Once again we note the absolute perversity and paganism—if indeed the latter word is not too flattering—of the "faculty doctrine."

The third "faculty" is that of *reason*; and this is a formidable one, under triple patronage. Our classical teachers are interested in it; so are our science teachers; so are our mathematical teachers. Classics, science, mathematics are all supposed to cultivate reason or thought. In point of fact, there is no proof and no probability that thought or reason cultivated along one line flows over into general intellectual power. The brilliant classical youth described by Kappa in "Let Youth But Know" possessed an "atrophied intelligence." The mathematicians of Laputa were "very bad reasoners." "Observation," too, "is the grave of thought"; one "faculty" is inimical to another! The truth is that *we reason best about the things that interest us most.* Thus, again, as with the other faculties, we are driven to ask the best way to build up, not a reasoning faculty, but a circle of interests; we are driven to consider the supply of ideas to our pupils. We note also that reasoning is by no means a monopoly of the good man; many villains are excellent reasoners.

"Accuracy," "exactness," "neatness," "thoroughness," and "punctuality" are not usually described as "faculties," though they have as much right to the name as any other of our processes. "Accuracy" is more especially under the patronage of the men of science, though classicists and mathematicians also insist on its value. "Accuracy," "neatness," and "punctuality" are "great school virtues" in the opinion of Mr. J. L. Paton; but he tells us that the "less

said about them the better"; which means, I take it, that their practice, not their rational value or justification, is the important thing. Now, unfortunately, these two qualities have been put to statistical test, and the results of the test are that "accuracy" and "neatness" in one department do not appreciably flow over to *other* departments of life.[1] That "thoroughness" and "punctuality" show a similar recalcitrancy is also pretty certain.

Thus once again we are driven back to the question of *the ideas which we supply to our pupils*. If we supply ideas of the value, beauty, and reasonableness of accuracy, &c., our school training in accuracy may be effective; otherwise it will fail. And in any case we must ask whether these much-praised qualities are in all circumstances moral qualities, or whether they may not be a part of the bad man's equipment. Mr. Bernard Shaw's recent address at the City Temple will at once occur to the reader.

Of the "faculty" of imagination I shall only say that imagination means much the same as wealth of ideas; and any attempt at "cultivating" the faculty must be concerned with the supply of ideas.

The position of the "memory" faculty is significant. The "faculty doctrine" has here notoriously given way, and few teachers now speak of "cultivating memory" through tables, or recitation, or dates. Yet fifty years ago they did.

I have now, I think, referred to all the "faculties" except one,[2] supposed to be cultivated by school work. The objections to mere "faculty training" are the same in each case. There is the moral objection that strong will, keen observation, great accuracy, &c., belong as much to the bad man as to the good, and need to be subordinated to some moral ideal of life. There is the psychological objection that there exists no general faculty of will, or of observation, or of reasoning; consequently training—*mere* training—does not "flow over." There is, lastly, the minor practical objection that one "faculty" seems likely to go counter to another if genuinely "trained" in isolation.

What is the conclusion? That there is need of a different set of categories; that we must speak of ideas, insight, apperception, interest, and the like; and that, with a proper regulation of the ideas supplied to our pupils, and with a growing knowledge of how to supply those ideas in attractive forms, the various "faculties" will set themselves in operation without much artificial stimulus from us. And if anyone should ask, "Are there no basal and original possessions of the mind apart from the ideas it acquires?" the answer would seem to be that certain instincts (flight, repulsion, curiosity, pugnacity, gregariousness, &c.), highly plastic, dirigible, and educable, alone satisfy this description; and that not one of these instincts corresponds even approximately to the list of "faculties."

"I have no conception of education without instruction," said Herbart a hundred years ago. But training and instruction are both necessary; Herbart wrote pages upon both; and our problem is to bring about a mutual adjustment. Instruction without training is empty; training without instruction is blind.

1 The tests are described in my "Education and the Heredity Spectre."
2 The omitted one is "conscience." And "conscience" is probably a crowning example of how a "faculty" is rooted in ideas, memories, &c.

TRAGIC DRAMA.[1]

MR. VAUGHAN, who is professor of English literature at Leeds, here publishes a set of his lectures in which he traces the form of the tragic drama from Aeschylus to Shakespeare and Goethe. It is a good idea, and encouraging as showing that the new universities do not neglect the study of the past. In his account of the Greek methods he says, of course, much the same as others have said; but he says it well. His analysis of the scheme of the Greek drama is good: he points out how little of action was necessary in the ancient drama, which dealt with the situation: the critical moment to which past action has been leading up; and in which it is to culminate. He points out that the ancients, Aeschylus and Sophocles, at least, dealt more with types than with persons. Aeschylus is characterised as the most spiritual of dramatists; the great forces that determine men's life are regarded by him as outside of man, by Sophocles as embodied in man's will and passions. Sophocles also is a master of the plot. Euripides enlarged the scope of the drama by adding new types of character and passion. His realism lay in the trappings of drama; he seems always to wish that the spectator may receive a "gentle shock of mild surprise." We should think that the shock was sometimes more than gentle. In Seneca, Mr. Vaughan sees another master of situation; and he points out how the device of the Ghost had a great influence on the Elizabethans.

The more original part of this book is the analysis of modern classical drama. Mr. Vaughan speaks clearly from independent study, and he has a keen eye for the points of a drama: he admires Racine, and gives good reasons for his admiration, and he does good service by directing attention to the power of Alfieri. In Alfieri he sees "three instincts, all possessed by him in the highest degree, while each stands in the closest connection with the others. . . . His characters are of a passionate intensity which, in the classical drama at least, has never been approached. He never rests until he has cast these characters into a train of action so framed as to bring them into instant and vehement conflict. Lastly, he has an unerring eye for realising the capabilities of such a situation down to the minutest detail."

1 "Types of Tragic Drama." By C. F. Vaughan. viii+276 pp. (Macmillan.) 5s. net.

Enough has been said to show the value of this brief and unpretending sketch; behind it lies a close study of all the chief dramatists of Europe, not only those mentioned, but Corneille, Calderon, and Shakespeare, Goethe, even Shelley, Browning, Hugo, and others who claim the title. The book bears the stamp of insight, and, moreover, interests the reader to the point of making him eager to study for himself. We owe sincere thanks to Mr. Vaughan for much excellent criticism, and we recommend the book heartily to our readers.

SOUND AND MUSIC.[1]

ADVANCED students of sound have long had occasion to complain of the absence of a text-book suitable for their requirements. This cause of complaint has now been removed: Dr. Barton has provided them with a volume which will certainly rank amongst the best advanced text-books that have ever been written. In writing this volume, the author has kept in view the needs of students who wish to follow a comparatively full treatment of the subject, although their limited mathematical attainments prevent them from profiting from such classical works as Lord Rayleigh's "Theory of Sound."

Many problems in sound are of such a character that they can hardly be solved without the use of the calculus and some of its developments, but Dr. Barton has simplified the mathematical treatment of the subject to a very noticeable extent, and thus brought it within the range of students who have no specialised knowledge of mathematics. Thus Lord Rayleigh investigated the vibrations of bars (including, as a special case, the proofs of a tuning-fork) by the aid of the Calculus of Finite Differences; Dr. Barton has attained the same end by the use of the Integral Calculus, the results being expressed in terms of hyperbolic functions. Expansions in Fourier's series are occasionally used, but an account of Fourier's theorem is given.

But it is not alone in the simplified mathematical treatment of the subject that the excellence of this volume lies; no less attention has been given to the experimental side of the subject, and many practical exercises are given which will be most useful to students following a systematic laboratory course. The latest developments of the science of sound receive adequate treatment; Larmor's proof of the pressure due to the reflection of waves is given, and the telephone, phonograph, gramophone, and the "speaking arc" are described. A welcome feature is the detailed treatment of that side of the subject which is in direct connection with music; thus Helmholtz's theory of harmony is explained, and attention is given to the nature and performances of the most important musical instruments. Numerous examples and problems to be solved by the student are given at the end of the book.

[1] "A Text-book on Sound." By Dr. Edwin H. Barton. xvi+687 pp. (Macmillan.) 10s. net.

EDUCATION IN SCOTLAND.

ELEMENTARY.—The annual General Reports (Cd. 4,085, price 4*s*. 7*d*.) of the Scottish Board of Education possess a yearly increasing interest and value to all students of educational progress. Facts and figures are given in abundance to prove the steady, onward march of education in the northern kingdom. These reports, however, are much more than mere records of progress. They also discuss in the most comprehensive manner the main questions that are at present vexing the educational waters all over the world. For example, a considerable part of this year's report is given up to discussing the nature of the education that should be given to pupils between the age of twelve and fourteen. The existence of a gap in the school system at this stage is recognised generally. Last year's report of the Curriculum Committee of the British Association merely emphasised what has been for some time recognised by all thoughtful teachers. There is urgent need in our elementary schools for more practical work, and for some form of specialised instruction for pupils who leave school at the compulsory age of fourteen.

The supplementary classes of the Scottish school system are, in the main, well designed to supply this want, and, having been in existence for some years, their practical working is subjected in this report to a careful study to bring out their strong and weak points. As readers of this magazine are probably aware, there are three main courses calculated to meet the wants of pupils looking forward to a commercial, an industrial, or a rural career respectively. It has been found that the commercial courses attract the bulk of the pupils, not necessarily because of their suitability, but because they require less in the way of equipment and appliances.

The rural course is rarely followed, as it has hitherto been found almost impossible to bring the instruction of the ordinary school into relation with the agricultural life of the district. As a remedy, it is proposed that funds should be placed at the disposal of the agricultural colleges to enable them to send into each county competent instructors for the purely rural subjects. This seems an admirable scheme, and its practical working will be keenly followed. The other subjects treated prove that those in charge of education in Scotland are advancing in no haphazard fashion, but methodically and scientifically, and looking both before and behind.

SECONDARY.—The fourth annual report (Code 4,310, price 5*d*.) of Dr. Struthers on secondary education has special interest for English readers. It opens with a general survey of the educational position, and closes with a detailed criticism of the methods of teaching the various subjects of the secondary-school curriculum.

The issue of the new regulations for grants to secondary schools promises to do much to co-ordinate secondary education all over the country.

Hitherto there have been two grades of schools engaged in secondary-school work, higher class and higher grade schools. In many instances the distinction was one of class and not of function, but hereafter schools are to be classified solely by function, and are to be known as intermediate or secondary schools, according to the stage of advancement to which they carry their pupils. The new regulations offer greatly increased grants to secondary schools, but these have to be bought with a price. All schools participating in the grants are required to submit their curriculum for the approval of the Education Department. Apparently little freedom of choice is permitted to them during the first three years of the course, as they are required to follow the lines of the uniform curriculum that has been in operation for some years in the higher grade schools. Science and drawing are the fairy godchildren of the Department at present, and the other subjects are treated as Cinderellas, whose duty it is to wait upon their good pleasure.

Thus, while English, history, geography, mathematics, and languages have to jostle each other for a place upon the time-table, science and drawing are placed in a class apart, with a mimimum amount of time, five hours per week, allotted to them. This preferential treatment is quite uncalled for. Everyone nowadays recognises the right of those subjects to a place on the time-table, but they do not require to be placed on a pinnacle apart. The report recognises that the action of the Department in this respect has aroused "genuine alarm" in certain quarters. It has done more. It has called forth emphatic and practically unanimous protests from all classes of teachers, and if the Department is not convinced and converted by the representations that have been made, it is because it is determined to carry out its own policy regardless of all the expert opinion in the country.

It would appear that no provision is made for teaching domestic science or practical housewifery to girls during the intermediate stage, and one does not gather from the report that even the science is of such a nature as to appeal specially to girls. Indeed, from beginning to end of the report there is no indication that there is such a thing as difference of sex. This surely is a mistake, and the practice of the English Board of Education might well be commended to those responsible for the curriculum in Scottish schools. Indeed, it may be said that secondary education in Scotland is suffering at present from too many and too rigid regulations. It is quite recognised that a certain amount of breadth must be secured in the curriculum, even at the expense of freedom of experiment. But in all schools of proved efficiency these regulations should be relaxed, and freedom in drawing up and carrying out their own schemes of instruction should not only be allowed but encouraged.

The following extracts from the report should prove of interest and service to teachers of the respective subjects:

ENGLISH.—The schemes for home and class reading show a steady advance on those of past years. Frequently, however, there is a lack of variety. Shakespeare, giant though he be, ought never to be permitted to occupy the whole field. A disposition to shirk the study of prose is occasionally excused on the ground that it is too difficult or too uninteresting. But, as one of the inspectors remarks, prose which is worthy of close and minute study is in fact difficult, although it need not be uninteresting; the best teachers succeed in making the difficulty itself a source of interest. This suggests another point calling for remark. It is scarcely a matter for surprise that many have not yet succeeded in striking a proper balance between the two different types of reading, the cursory and the intensive. On one hand, in the effort to widen the pupil's knowledge of literature, there is a risk that he may be allowed to neglect those hard, intellectual elements of training which are essential to the acquisition of a tolerable mastery of the language—accurate interpretation, a careful study of diction, and some acquaintance with historical grammar; if the study of English is to be utilised to impart the maximum amount of educational benefit, there must certainly be some part of the work in which every difficulty is resolutely faced, and any sign of slovenliness and inexactitude sternly repressed.

Recitation receives a considerable amount of attention. But in connection both with this exercise and with reading aloud there seems to be great room for improvement. One inspector states that it is rare to find poetry repeated with real and natural expression, or to find prose repeated at all. Local defects of enunciation and accent are frequently allowed to go uncorrected, and indistinctness of utterance is regarded as a venial fault. As a result, the inspectors have to complain that whole schools are infected with the pernicious habit of low and inarticulate speech. No doubt self-conscious boys and girls do not take kindly to oral examination by a comparative stranger. And yet with careful and persistent practice it is remarkable what a degree of confidence and fluency can be attained.

"For the essays," says one examiner, "I have nothing but praise." "Many of the compositions," says another, "were imaginative and original." In brief, by common consent the compositions this year were the best that have ever been done in this examination. The verdict on the question of interpretation presents a marked contrast. With some brilliant exceptions the candidates generally were prone to regard this element of the paper as a mere opportunity for displaying their ingenuity in word-changing. Even when the gist of the sonnet was fairly well caught the notes were conventional and prosaic. Vague generalities like "very neat," "adds to the description," "heightens the poetical effect," are, of course, valueless. On the other hand, this was one of the questions where the very best candidates shone conspicuously. Analysis of sentences was extremely good. Etymology, however, was again poor; it is regrettable that so important a branch of language study should be neglected. Syntax was better than in previous years. The passage from Izaak Walton was something of a novelty. It was often chosen, but was not so easy as it looked. The archaic spelling gave little trouble—except to the candidate who interpreted "If the angler take fysshe" as "If the angler take physic"—but many were content merely to modernise this spelling or at most the obsolete words, leaving archaic idiom and sentence-structure untouched.

The answers on literature were fairly well done, although the question on the essayists revealed much ignorance disguised by text-book quotations. The question embodying a series of poetical extracts, each giving a different personification of Death, was, of course, intended primarily for the abler candidates, and some of those who selected it did it most admirably. Others, who could probably have answered one of the alternatives quite well, misapprehended the point entirely; perhaps the wildest guess was that which saw in Milton's King of Terrors the description of a windmill moving its arms at night.

Geography.—Scottish geography was not known as Scottish boys and girls ought to know it. Thus of the few candidates who attempted a map of the Tay valley scarcely one tried to show the edge of the Highlands—surely one of the most conspicuous and important features in the scenery of Scotland. Knowledge of their own neighbourhood, even, could not often be counted on. Once more, topography and political geography still usurp too large a share of attention, to the detriment of weightier matters, such as climatic causes. Political divisions should be taught after, not before the climate and build of a country have been studied. Lastly, the information displayed was not always up to date. It must be remembered that geography is a growing subject. Our knowledge of geographical facts is increasing yearly, and the laws under which these facts are marshalled are gradually being formulated with greater precision. Teachers who desire to keep in the forefront cannot rest content with the geography they acquired at school or at college.

Classics.—Much sound work continues to be done in classics. It is to be feared, however, that many teachers of ancient languages have as yet failed to appreciate the great advance that has taken place in the handling of other subjects, and the consequent necessity laid upon themselves of putting more thought into the question of method, if classics is to maintain the position it has held so long, and held so deservedly, as one of the finest instruments of a liberal education. In spite of the improvement visible in a fair proportion of schools, one is still apt to find undue attention being paid to useless grammatical detail in the earlier years of the course. This applies more particularly to Latin. Repetition is less frequent than it ought to be, and pronunciation is far from being universally satisfactory. Composition is carefully taught; but the baneful habit of setting what is much too difficult is still prevalent to a degree that involves immense waste of effort. The advantages of retranslation are not sufficiently appreciated, nor the extent to which systematic oral practice is calculated to impress ordinary forms and constructions on the mind of the learner. The position is better in regard to Greek, which has the further advantage that it is seldom taken except by pupils of real ability. It is beyond dispute that the standard of scholarship reached in Latin would not suffer if there were a sensible reduction in the number of those who attempt to study it.

In the written papers there was again apparent the neglect to apply the touchstone of common sense to the translation of unseen passages. In some cases it amounts absolutely to a temporary failure to realise at all that the function of language is to express a meaning, to describe "things." What, for instance, is to be said of the state of mind of a pupil who, seeing before him the Latin sentence, "*Hoc sedato tumultu crebrae continuis diebus concitationes fiebant*," deliberately proceeds to put down as a rendering of the first six words: "Having seated himself on a mound of brambles for the following days"? This is not by any means an extreme example, but it is typical. There is no novelty about the phenomenon; attention has often been directed to it in these reports, and it is only too familiar to those who have revised language papers in connection with any school examination. But it is doubtful whether teachers generally are alive to the fact that it is symptomatic of a definite defect in method. It constitutes an unanswerable indictment of the ordinary system of trying to teach a language *through* translation. It suggests that much of what is "read" in schools is not in the least understood by the very pupils who have been made to construe every word of it. Their sight has been focussed upon the forms of language, and they have not been sufficiently encouraged to look through the forms to the sense.

French.—The reports received from the visiting inspectors are unanimous in their testimony to the sure, if gradual, progress that is being made in French. There could be no more satisfactory sign of the vitality of the subject than the enthusiasm with which the younger generation of teachers are striving to improve their qualifications. The number of those who have not lived at least a short time abroad is rapidly decreasing, and many make a practice of spending a portion of each summer in France. The fundamental ideas underlying the "new method" are also being grasped and applied with firmer hands. In other words, there is evidence not only of zeal and knowledge but, what is at least equally important, of common sense and judgment. Pronunciation improves slowly, although the characteristic vowel and nasal sounds still present difficulty. More advantage might be taken of phonetics as a scientific aid in attacking the problems involved; even when a sound-chart has been obtained, it is frequently not used, or not used in the proper way.

German.—Several of the visiting inspectors have discussed the undoubted eclipse which the popularity of German has recently undergone. The matter cannot be effectively dealt with apart from the wider question of the organisation of the curriculum as a whole. At the same time it may be helpful to indicate here the more important of the causes which, in the opinion of the inspectors, are contributing towards the decline. It may be doubted whether much weight is to be attached to the fact that the number of qualified teachers of German is small as compared with the number well qualified in French; if the demand were equally great, an equally abundant supply would be forthcoming. Nor does there appear to be much force in the suggestion that the initial difficulties of the language have a deterrent effect; the relative simplicity of the pronunciation provides ample compensation for the complication of genders and declensions. On the other hand, it cannot be gainsaid that the inertia of tradition exercises an influence that is very hard to contend against; this is all in favour of French in cases where a choice has to be made. Not less powerful is the sway which university regulations wield over the conditions of work in secondary schools. These are the main forces with which managers will have to reckon in any endeavour to stem the current. In the circumstances it is greatly to the credit of the teachers that the level of the work done in schools should continue to be well maintained.

Mathematics.—There can be no doubt as to the general efficiency with which mathematical subjects are handled in the schools. Methods, too, are steadily improving. Under the influence of the leaving certificate examination the water-tight doors that used to divide the various branches

of mathematics from one another are slowly yielding to the pressure of more enlightened and more fruitful ideas. In some of the larger schools, however, the process is sadly hampered by a survival of the old-fashioned tradition which assigned arithmetic to one teacher, algebra to another, geometry to a third, and possibly trigonometry to a fourth. This is a serious blemish in organisation. If it be accompanied, as it occasionally is, by the want of any common supervision, it becomes positively culpable. It has the unfortunate effect of destroying the homogeneity of the pupil's mathematical training, and of rendering it difficult for him to obtain a satisfactory outlook on mathematics as a whole. In arithmetic one still finds here and there the study of repeating and circulating decimals occupying a good deal of the attention of intermediate pupils in the first and second years of their curriculum. On the other hand, the idea of approximation and contracted methods of multiplication and division are seldom introduced until near the close of the third year, a postponement that is surely most uneconomical in view of the opportunities for the practical application of these methods afforded by the science course in the first and second years.

Again, algebra seems to suffer beyond its fellows from the fallacy of isolated treatment. Two or three different reports complain of its being taught in an antiquated, mechanical way, with little regard to its connection with arithmetic and no correlation with the work done in geometry and science. Once more, the complete value of a carefully graded sequence in experimental geometry is not yet properly appreciated everywhere. This weakness is to a large extent due to a rigid adherence to some selected text-book, without any effort to develop independently a reasoned series of connected exercises. Finally, in all branches alike there tends to be a lack of equilibrium as between the experimental and practical element on one hand, and the demonstrative and theoretical on the other. Still, clearer conceptions of the ideal relation between practice and theory are undoubtedly making headway. It is where the two are firmly linked together and directed towards a common end that the highest results are obtained. In the meantime it is good to be assured that: "The teachers are unanimous in testifying to the greater interest shown by the pupils in mathematics since its practical side has been developed, and all but unanimous in declaring that the change has led to a more intelligent grasp of theory."

SCIENCE.—Taken as a whole, experimental science studies seem to be settling down into well-arranged and well-conducted courses of suitable work. At the same time there were disquieting signs, in not a few cases, of a desire to overload the programme unduly, and to aim at covering too much ground. In connection with the point at issue one of the external examiners says:

"Discussion of phenomena should be fuller and slower; should give more attention to the pupils' own notions, and should lead to a definite proof of their truth or falseness, or to a clear perception of an unsolved difficulty. . . . Few pupils showed any real power to investigate such simple problems as the action of heat on a given substance, or the action of a given acid on a given solid. . . . In the teaching of botany, again, there is too much telling, and too little training of the powers of observation and deduction. Before teaching the pupils the microscopic characters of stems and roots, it would, I think, be well to see that they know those that can be seen by the unaided eye, or with the help of a simple lens only."

ELEMENTARY SCIENCE IN THE PRIMARY SCHOOL.[1]

By Sir PHILIP MAGNUS, M.P.

A COMMITTEE was appointed at Southport in 1903 to consider the studies most suitable for elementary schools and to report generally upon the course of experimental, observational, and practical studies to be pursued in such schools. The appointment of the committee was the outcome of a generally expressed dissatisfaction with the results of elementary education during the preceding thirty years. It was felt that in many respects it had not succeeded to the extent anticipated in producing intelligent, capable, and resourceful citizens. Complaints came from employers in different trades, from heads of commercial firms, from officers in the Navy and in the Army, and from teachers in continuation, technical, and other schools into which pupils on leaving the elementary schools were admitted. The committee nominated several sub-committees consisting of persons interested in the teaching of different groups of subjects. These sub-committees have reported from time to time.

Since the committee was first constituted many improvements have been effected, and full recognition should be made of the high ideals set before teachers in the prefatory memoranda to the "Regulations" published by the Board of Education. Nevertheless the true aim and purpose of elementary education do not appear to have been realised fully, and its relation to the pupils' life-work seems to have been neglected too much. The methods of teaching have been, and in many respects are still, defective, owing to the excessive reliance on book-learning and on oral instruction unaccompanied by practical and experimental work on the part of the pupils. The scheme of education is incomplete owing mainly to the want of correlation between the subjects taught and to the neglect of a much-needed adaptation of the curriculum to the requirements of actual life. Subjects of the highest importance have been regarded as extras outside the ordinary curriculum, and the larger part of the school lessons have failed to stimulate observation, to encourage initiative, and to create those habits of self-reliance which are essential to success in the workshop, the field, or the counting-house, or in the discharge of domestic duties.

A report of the committee was presented to the section at the York meeting in 1906, and contained appendices dealing with the practical teaching of arithmetic and mensuration, nature-study and domestic subjects. The presidential address at Leicester dealt in part with kindred subjects. In the teaching of science a remarkable improvement has been shown already, due very largely to the efforts of Prof. Armstrong, and advances have been made in manual instruction and in other branches of practical study very largely through the efforts of other members of the committee.

The report on science teaching presented this year and the discussion on rural education (p. 368)

[1] Summary of a Communication to the British Association, September, 1908.

are further contributions to the solution of the problem referred to the committee. The problem is one of the highest importance, whether considered from an economic or a national point of view. For its satisfactory and complete solution further experiments in teaching are needed, and help must be obtained from the central as well as from local education authorities. Moreover it is essential that teachers should be so trained as to be able to give instruction in accordance with the principles recommended by the committee in its reports. It is hoped that the efforts of the committee, and of its individual members, will result in the introduction into our elementary schools of a revised curriculum based on practical studies.

Twenty Years of Progress.[1]

This branch of instruction in primary schools has been the subject of inquiry within recent years by two committees of the Association. The fundamental principles that should guide the teaching of elementary experimental science were clearly enunciated in the 1889 and 1890 reports of the committee of Section B on the teaching of chemistry. The experience of the past fifteen years tends to emphasise rather than to modify the recommendations of those reports. During this period a remarkable transformation has taken place in the teaching of elementary science in this country, traceable in its origin to the 1889 and 1890 reports and to the indefatigable efforts of Prof. Armstrong and other members of that committee to achieve reform. In place of a large number of alternative specific subjects, none of them really fundamental in character, it is now insisted that there should be one general introductory course, indoctrinating that alphabet of scientific method and knowledge upon which the intelligent study of all specific sciences is based. The reports directed attention to the overwhelming importance of method in instruction by insisting that mental training and the formation of accurate habits of observation, of work, of reasoning, and of description were at the early stage of education of far greater moment than the accumulation of facts or the ability to answer examination questions on these facts. The deliberate intention to achieve these ideals must lie behind all teaching of elementary science. To accomplish such ends it was found necessary to recommend a complete change in the methods of instruction commonly practised and in the attitude of the teacher towards his pupils and his subject. The method of experimental inquiry is the only natural method of gaining a knowledge of scientific facts; but such a method is the very antithesis of the didactic method of instruction too generally in vogue.

The practical method of inquiry now known as "heuristic" has been defined as "carefully directed inquiry." Instruction should take the form of the experimental solution of a series of problems arranged in rational sequence. The motive for the experiment must be the outcome of skilful teaching, in which the teacher has led his pupils from the known to the unknown and to a clear conception of the problem to be solved; the experiment should not be merely an occasional effort to substantiate one of the many facts that the teacher has told his class.

Teaching in which experimental results are to form the basis of reasoning and to be regarded as suggesting new problems should involve precision; the facts must at least be true, or the method is obviously of no more value than those it is intended to supplant. Measurement may be the basis of experiments, and quantitative thinking should always be encouraged.

The reports referred to have profoundly influenced directly and indirectly the science teaching in secondary schools. Well-equipped laboratories have been provided in almost every good school, and the attempt to give logical experimental instruction is at least professed.

In the primary schools great changes have also taken place; the higher grade schools of the larger urban education authorities are usually well equipped, and a special teacher of experimental science is appointed to take charge of the laboratories. Increased provision has also been made in pupil-teacher centres and in training colleges for the teaching of experimental methods.

In many urban centres, from reasons of economy and because few of the ordinary teachers possessed an adequate acquaintance with apparatus and experimental methods, a special staff of peripatetic science demonstrators was appointed: these taught periodically in the schools of their district, usually carrying their apparatus about with them. The scheme of instruction followed was known as "Mechanics," but embraced a superficial treatment of hydrostatics, the laws of force and motion, heat, chemistry and electricity. In some cases the individual ability of the demonstrator made the lessons useful and interesting, but the system was only adopted as a matter of expediency, and the scheme of instruction has been far too comprehensive to lead young children to much real knowledge that could be applied to life later. Under this system of peripatetic instructors little effort has been made or could be made to co-ordinate instruction in science with that in other subjects, such as composition, arithmetic, and drawing. Between the visits of the special instructor the class teacher was supposed to revise the lesson without the assistance of the apparatus that the former carried round with him: this revision was done in a half-hearted way, and led to undesirable methods of memorising half-digested information.

It appears to be undesirable that the system of special peripatetic instructors should continue, except as a temporary expedient and until each school possesses a permanent and sufficiently qualified teacher of experimental science. The services of a staff of specialists should be employed in instructing the ordinary teachers, more especially in the methods of teaching and organisation. The rigid adherence to the class-teacher system met with in most primary schools should be abandoned, and the best qualified teacher should be responsible for the instruction in several classes, if not for the whole school; it should be the business of the head teacher to ensure adequate co-ordination of instruction in drawing, composition, and arithmetic with that in science.

Nature-study and Experimental Science.

The "Suggestions" of the Board of Education deal in detail with the aims and methods to be observed in nature-study, the advice therein given being substantially in agreement with our report presented at the York meeting. It is satisfactory to notice that the guiding principles which through the teaching of experimental physical science have been instilled into the minds of teachers are now recognised as applicable and desirable in instruction relating to natural objects and phenomena; at the same time it is to be feared that the present tendency to substitute "nature-

[1] From a report of the sub-committee on elementary experimental science, consisting of Prof. H. E. Armstrong, Mr. Heller (secretary), Dr. Kimmins, and Prof. Smithells, of the British Association Committee on Studies most suitable for Elementary Schools.

study " in the higher standards of schools for a systematic, logical, and progressive course of experimental physical science has grave dangers.

A very considerable amount of the " object teaching " in the lower standards is of a highly artificial character, being in most cases educationally valueless. It would seem to be essential that a broad outline of a scheme of object-studies should be prepared by the teacher for the year's work in advance, and that these should be connected at least in short series. They should involve to a large extent a real examination of individual objects by the pupils themselves, and should on no account be demonstration lessons in which the teacher holds a single specimen in his own hands. Good subjects for such lessons are those connected with plant-life, for it is easy to obtain sufficient objects at practically no cost. In the minority of cases where the pupils can be taken out of doors under the charge of the teacher, real nature-lessons can be given; but in the majority, where the conditions of school work render such outdoor lessons an impossibility, much useful observation may be encouraged by mentioning the subject of the next lesson several days beforehand and by suggesting a few simple and definite inquiries. The lessons in the spring and summer months will be mainly in connection with natural objects, but in the winter months it will be difficult to obtain an adequate supply of objects for examination by the pupils. This period might be usefully occupied in lessons introductory to the work of the higher standards; the nature and uses of water, air, and food-materials form perhaps the most useful and interesting subjects.

It is needless to say that the teacher who is to give the first ideas on these subjects to young children must be at least as well qualified as the teacher of more advanced work in the higher classes of the school. A more systematic and connected treatment will commence about Standard IV., and must of necessity begin with careful lessons in the measurement of size and weight.

In the endeavour to suggest a better correlation between instruction in physical and biological science, it must not be assumed that the committee fails to realise the great importance of the latter; the neglect of the study of outdoor life that huge classes and the methods of the " results system " have engendered is to be deplored, and in a previous report the committee has strongly advocated the employment of more scientific methods of instruction in this branch. English nature-study is largely based upon the writings and methods of American teachers, and the wave of enthusiasm which has spread from that country has brought together with much which is admirable much which is unsound and superficial. The neglect of experimental methods of inquiry in the teaching of physical science is one of the weakest points in the curricula of America's schools, and in consequence their school nature-study has suffered. At any rate, it should not be forgotten that Nature is concerned with dead as well as with living matter, and that a knowledge of the transformations of the former is essential to the study of the latter.

In the lower standards the degenerate " object-lesson," which more often than not amounts to little more than a didactic information-lesson, should give place to *real* study and observation of plant-life and the more obvious natural phenomena; before any detailed study of the conditions of plant-growth can be attempted with success a systematic experimental study of the simplest physical and chemical changes is necessary.

If science teaching is to achieve its full effect in training the reasoning powers and in forming accurate habits, it must involve the experimental solution of problems; as an instrument for exemplifying the experimental method of inquiry, physical science has many obvious advantages beyond those offered by a study of biological subjects; a study of such simple physical subjects as the nature of air, the effects of heat on matter, fluid pressure, the composition of the atmosphere and the effect of plant and animal life upon it, would seem to be fundamental to any intelligent study of plant-growth, and should certainly precede it; in the study of plant-life the conditions of experiment are so complex that the experimental method of inquiry can only be followed to a very limited extent in elementary schools.

The enthusiastic teacher who has made nature-study his hobby will rise superior to syllabuses and programmes, and should be given a free hand; the average teacher, however, finds a carefully drawn and detailed syllabus of work helpful. For such teachers it is difficult at present to provide a scheme of biological studies that will ensure regular and progressive instruction. In physical science, the difficulty of preparing graduated syllabuses is not so great.

In deciding what practical work of an exact kind is most suitable for individual pupils in the upper standards of an elementary school, we feel that by skilful teaching of experimental science better training may be given than by the conventional methods of nature-study, and that it is more easy to obtain a supply of competent teachers in the former than in the latter branch. Further, that much will be lost if the pupil leave the primary school without a knowledge of those fundamental facts necessary to the intelligent understanding of the common phenomena of daily life; he should at least be equipped with that substratum of knowledge of physical science which is necessary to the continued study of any branch of science, whether technical, agricultural, or domestic.

Training of Teachers.

It is of little avail to advocate the teaching of a method or subject unless an adequate supply of teachers fully competent to handle the subject can be trained. A training in the methods of experimental physical science, although not easy, has already been undertaken with some degree of success in many parts of the kingdom, but with a few brilliant exceptions comparatively little has been achieved in the training of teachers competent to direct nature-study; such training presupposes a knowledge of experimental method and a taste for and considerable knowledge of natural history. Under existing conditions it is easier to train teachers of physical science than it is to secure teachers competent to deal with the complex issues involved in the study of living objects.

Until recently, the training in science that teachers have received has done very little to equip them for their work in schools, and it is cause for congratulation that improvement is taking place in the character of the instruction given in the training colleges. It is not sufficient that the teacher should leave the college with a schoolboy's knowledge of science. However little he knows, he must have a teaching grasp of that little, and have realised fully the aims and ideals to be kept before him. Instruction in the training colleges should keep the teaching idea continually in the minds of the students. The tendency to teach specific subjects of science in the training college should be discouraged. This is the function of the university or technical school; the business of the training college is primarily to show the future teacher the methods of his work. It is essential that students entering the training college should be fully familiar with the subject-

matter of introductory courses in physical science. This condition is fulfilled where a student has attended a pupil-teachers' centre or a secondary school. A large bulk of first-rate teaching material is to be found, however, in the existing teachers who have been engaged at their professional work for several years, but have had no opportunity of being trained in scientific method. For these some provision must be made, and there is ample experience to show that short practical courses under competent instructors have excellent and lasting effects. To conduct such classes of teachers it is necessary to secure instructors of special experience: they must have superadded to a good knowledge of science a very considerable teaching experience, and should be familiar with the conditions of work in the schools concerned. For such classes sufficient apparatus must be provided, if possible, to enable the teachers to work independently; the chief purpose would be to illustrate the methods of instruction and to inculcate the proper attitude of mind in the teacher.

The course would be best divided into two parts, each of not less than 100 hours of laboratory instruction. Experience shows that students who have attended special classes or training colleges often fail to obtain a sufficient grip of the subject to enable them to teach effectively after the first course of lessons; a second revision course is of great value to these, especially if the teacher in the meantime make an honest attempt to teach the subject in school.

Organisation of Practical Work.

Where the school is provided with a laboratory, it is desirable that one teacher should be responsible for its care and for the instruction that is given within it; if it is necessary to employ a second science teacher, he should act as an assistant to the responsible science teacher. A balance and other apparatus should be provided, if possible, for every two pupils in the laboratory. In designing a science work-room, it is neither necessary nor desirable to provide elaborate furniture. Strong tables fitted, if possible, with gas, and plenty of floor space, are all that are really needed. A separate lecture-room is unnecessary, but a demonstration table and a few forms should be placed in the laboratory. It is undesirable to provide storage accommodation for individual pupils; cupboards under the tables should be designed for the purpose of general storage. There should be no shelving on the tables, and two or three large sinks on the walls of the room are all that would be required.

In comparatively few cases, however, has the primary school a special room for the teaching of experimental science at its disposal; but in the majority of cases, where no such room or equipment is available, the individual practical work of the pupils cannot be carried out simultaneously. The few simple pieces of apparatus necessary for the leading experiment or experiments of the week's work should be kept upon a table in the class-room or upon a narrow shelf hinged to the wall throughout the day, and pupils should be sent out singly or in pairs from time to time at the discretion of the teacher during any periods in which no class instruction is taking place to repeat experiments which have already been carefully performed before the whole class and thoroughly explained. An equipment of value about £10, in addition to a good strong table and storage accommodation, will enable a very considerable amount of practical work to be accomplished.

The minimum time necessary is one and a half to two hours per week, exclusive of the time devoted to the writing of notes, which may form a considerable part of the teaching of English composition in the school.

The teacher's demonstration lesson, in which he breaks new ground, should be of about one hour's duration. In this lesson, having led his class to an appreciation of the problem to be solved and having obtained from its members suggestions as to the mode of solution, the experiment will be performed, possibly with the assistance of some of the pupils, the results will be recorded, and between this and the revision lesson later in the week, or even in the following week, the experiment, if suitable, will be repeated by the pupils working in pairs at odd times during the progress of other lessons. There are many suitable periods for such work, and the ten or twenty minutes that a pupil keenly interested may spend at an accurate experiment will not be wasted, nor will an appreciable interruption of other studies occur. Much successful work from this plan has been accomplished, but, like any other kind of teaching, to be effective it requires an enthusiastic teacher who will take the trouble to organise it regularly.

In any school where the discipline is sound such individual work causes no interruption after the novelty of the first few lessons has worn off. All the experimental results obtained should be recorded and tabulated in a log-book, in which the teacher also enters his results obtained at the demonstration lesson. No conclusions or generalisations should be drawn until a number of pupils have repeated the experiment and recorded the results. The teacher should then make these results the basis of his next lesson, endeavouring to trace the reason for the want of agreement of any particular result with the rest; conclusions should then be drawn, so far as possible, by the class, and the whole piece of work reviewed and suggestions made as to the method of writing an account of the work which has been done. It is necessary at first for the teacher to summarise on the blackboard the various points in order with which the composition should deal, but anything in the way of dictation or transcription is valueless. The compositions must represent the children's thoughts in their own words. The experiments which the pupils repeat individually should, as a rule, be those that yield a definite quantitative result; there is little to be gained by repeating individually merely qualitative effects.

Preparation of Lessons.

In a subject in which the methods of instruction are of greater importance than the intrinsic value of the information conveyed, the preparation of careful teaching notes is an essential element in success. It is impossible that science teaching can be fully effective unless careful consideration of every lesson is given beforehand. As year by year the teacher acquires increased experience, the amount of time that he will find it necessary to devote to the preparation of his lessons will diminish, but the more skilful he becomes the more will he appreciate the necessity for thought in his teaching. In the preparation of lessons he must consider carefully how he is to lead from what has been learned already to the subject-matter of the new lesson. Before suggesting any experiment he must make it absolutely clear why it is to be performed; the problem to be solved should be kept prominently in the minds of the pupils throughout the lesson. He must, further, consider all the difficulties the pupils are likely to meet in acquiring new ideas, and, finally, lay considerable emphasis upon the application of the results of the lesson to daily experience. But notes of lessons are not popular with teachers. The reason is not far to seek. In training colleges students

often have been taught to write highly elaborate and highly artificial notes upon extremely simple subject-matter. The only useful notes are those which will help the teacher in his teaching; a few short sentences will usually be sufficient to indicate the train of ideas he intends to follow. Elaborate columns of heads, matter, and method have probably done at least as much harm as good.

There can be little doubt that at present boys exhibit more initiative than girls in the general work of the standards; girls appear to be more prone to work by rule of thumb. Without attempting to discuss the reasons for this characteristic, the fact remains that domestic duties call for more initiative, more executive ability, more power of organisation, and more common sense than do the ordinary vocations that boys follow on leaving school. The woman in the home is confronted continually with new problems the solution of which demands trained intelligence and a habit of thought. A training in the methods of experimental inquiry would appear to be the most direct means of creating the thinking habit, and if the subject-matter of inquiry chiefly relate to the phenomena and materials of home life such teaching should do much to render more rational the management of the home. Experiments made during the past three years in two large schools in Dublin and Belfast, in each of which 500 boys and girls have been taught by the same instructor, tend to show no material difference between boys and girls in reasoning or manipulative ability after the first arithmetical difficulties have been overcome; we believe that the reforms in the teaching of arithmetic suggested in our last report, accompanied by accurate experimenting, would do much to abolish the love of rules and recipes so often noticed in the higher classes of girls' schools. There is little reason to advocate different courses of instruction for boys' and girls' schools; the explanation of the common phenomena of daily life are of equal importance to both, although it may be advisable to consider popular prejudice and make the boys' programme look a little less domestic than that of the girls.

INSPECTION.

The aims and methods we have advocated obviously demand much enthusiasm, intelligence, and skill on the part of the teacher. To appreciate such effort, the inspector must be at least as familiar with the subject-matter and the proper modes of its presentation as the teacher himself. Nothing takes the heart out of a teacher so quickly as a want of appreciation of really earnest work. In assessing the value of such work the inspector should ascertain that a carefully thought out scheme of work has been regularly and progressively followed; an examination of the pupils' note-books recording the year's work, supplemented by some general oral questions and the carrying out of practical exercises by a selected number of pupils, should afford him all the information that is necessary. If the class does not show an intelligent understanding of the purpose for which experiments were performed, it is desirable to examine the character of the teacher's preparation of lessons.

CONCLUSIONS AND RECOMMENDATIONS.

(1) The recommendations of the committee of Section B on the teaching of chemistry, in reference to the subject-matter and methods of instruction, should be followed in giving instruction in elementary physical science.

(2) The committee does not consider the system of peripatetic science instructors satisfactory, except as a temporary expedient.

(3) Every primary school should be provided with a special workroom simply furnished, in which many forms of practical study could be followed—*e.g.*, manual instruction, drawing, and elementary science for boys, and cookery, laundry, drawing, and elementary science for girls.

(4) That while fully appreciating the value of studies of natural objects and changes, the committee does not consider that "nature-study," as conducted under the conditions of work prevailing in the average primary school, provides *by itself* a satisfactory substitute in the higher standards for formal and systematic instruction in elementary experimental work in physical science.

(5) Much of the present object-teaching in primary schools is practically valueless; throughout the standards some study of natural objects is desirable.

(6) In the training colleges more attention should be paid to aims and methods of instruction in elementary science.

(7) Ample provision should be made for classes of a pedagogic character, in which existing teachers may become acquainted or increase their acquaintance with methods of experimental inquiry.

(8) Accurate practical work by individual pupils is essential if the teaching of experimental science is to achieve its full educational effects.

(9) Where practical work by all the members of a class simultaneously is impossible, much useful practical work may be done by a few working at a time.

(10) The committee regards the teaching of methods of experimental inquiry as being of even greater importance to girls than to boys, in that it provides a training of special importance in domestic management.

(11) The teaching of domestic art should be much more closely co-ordinated with the teaching of domestic science, and the former should be so taught as to provide an intellectual as well as a manual training.

(12) It is important that inspectors of schools should possess an adequate knowledge of the subject-matter and methods of instruction in elementary science.

THE REGULATIONS FOR SECONDARY SCHOOLS, 1908–9.[1]

By J. W. SHUKER, M.A.
Headmaster of the Grammar School, Newport, Salop.

THE regulations for 1908–9 show that the Board of Education is continuing to develop what I may term the revolutionary policy inaugurated by the regulations for the previous year, in the direction of providing free education at the expense, not of the nation or of the district, but of the schools which were supplying secondary education, in most cases at less than cost price, long before there was any department of the Government which "cared for such things."

I do not propose to discuss the merits of "free places" or the excess of representative governors, but I should like to direct attention to the fact that in the matter of free places the Board cannot, or at any rate does not, carry out its policy to its logical conclusion—which must be that secondary education should be within the reach of all. For, surely, where fees are high, there is a larger proportion of parents unable to pay them than where they are low, so that more free places are required in the former locality. But what do we find?

[1] A paper read before a meeting of the Association of Headmasters of Endowed Schools in the Midland Counties.

I will take the case of two neighbouring schools, at one of which the fees are low—£3 a year—while at the other they are from £12 to £15. This means that at the former school they are within the reach of all but what I may term the lowest stratum of society, *i.e.*, they can be paid by the better-class artisan and the small tradesman. But the fees at the other school are beyond the means of a much wider range of parent. Therefore which locality requires more free places? The latter, without a doubt. And which has them, under the Board's decree? Why, the former! for the school with low fees has to admit 25 per cent. of its pupils free, while the other gets off with 12½!

Now, I am not complaining of these decisions, illogical as they are: 25 per cent. will not ruin the one, and the other could not admit so large a number free and continue to exist. But what is the principle on which they are based? If free places are necessary, so that all may have a chance of secondary education, let them be assigned according to the needs of the locality, and then let the Board pay for them. As it is, they are cutting the corns to get the new boots on, instead of fitting the boots to the feet.

I have not tested the figures given by the Leeds Education Committee and quoted in the last review of the *I.A.H.M.*, but they are striking and instructive. I am hoping that they will both strike and instruct the officials at the Board to whom they were sent, for they promptly reduced the percentage to, I think, 10, and this, mind you, in the case of rate-supported schools!

In a school of 100 boys, with fees £10 a year, and therefore losing £250 in fees, how much margin will be left when this loss is deducted from the £330 grant which is earned (60 boys at £5 and 15 at £2), to provide the better—and larger—staff, &c., suggested in the regulations?

But this year we are to supply stationery, as well as education, free—a matter apparently of small account, as it is relegated to the appendix and not mentioned in the regulations. How will this affect schools which do not supply stationery at a terminal fee and have not the machinery for its distribution? Then there is another item tucked away in rule 2 (*c*) of the appendix, ordaining that the written consent of the parent must be obtained to pay subscriptions for games, &c., which mean little or nothing to the individual parent, but which may become a heavy charge on the school authorities. For if a parent refuses his written consent and the refusal becomes infectious, B down to Z objecting to pay because A does not, is the whole cost of the games to fall on the governors? or is the headmaster to make up the deficit? It looks as though the Board has come to the conclusion that last year's regulations were too generous to the schools, and so has whittled down carefully whatever margin may have been left between the amount of fees remitted and the total grant received, leaving the total cost of education to fall on the schools. I wonder how many of those who are responsible for these additions have any practical acquaintance with running a cricket, football, and athletic club, to say nothing of appreciating the aggregate cost of stationery in a school.

With regard to the purely educational changes, I would direct attention to the following, as worthy of approval, tending as they do in the direction of elasticity and of giving headmasters a freer hand than before:

(1) *That Latin need not be for all pupils.*—This is desirable in the case of boys entering the school late, who cannot possibly make any real progress in two languages.

(2) *That a varied curriculum may now be extended to individual pupils generally.*

(3) *That grant-earning schools may be required to submit their pupils to an outside examination.*

For valuable as an inspection may be, it does not and cannot from its very nature take the place of an outside examination, either as a stimulus to effort or as a test of work done. This is, in my opinion, proved in the case of elementary schools, where they may be teaching on better principles than they did, but certainly the boys who come to us—with the exception of the County Council scholarship boys, who *are* prepared for an outside examination—are not nearly so accurate in arithmetic and spelling or so neat in drawing and writing as they were before examinations were abolished, because there is nothing to stimulate either teacher or taught.

Among alterations more open to doubt in my opinion, I note the provision in art. 15, by which the Board may require that a certain proportion of new appointments shall consist of trained teachers. An excellent thing this later, when a belated decision has been made with regard to registration, and when the prospects of the teaching profession are such as to induce good men to take a training course, but decidedly premature now. How many Oxford and Cambridge men applying for posts are trained? Very few, I should say. Are these men, therefore, to be barred, when we want as many of them as we can secure in our schools? Does the Board think that education in its best sense is confined to the class-room and to the exposition of an approved curriculum in accordance with a time-table which has run the gauntlet of a week's inspection during the early days of October?

I am glad to note that the Board, when a school changes the beginning of its year from January to August, will now pay two-thirds of the grant for two terms out of three, instead of seven-twelfths for seven months out of twelve, which has hitherto been its mathematically correct, if not exactly equitable, procedure. For it was hardly fair to fine a school a twelfth of the year's grant for carrying out the Board's own wishes. I trust that this will be followed by another reform in a matter which has pressed hardly on many schools, viz., the reduction or total loss of grant on pupil-teachers who, obeying the explicit directions of their local education authority, have made too many attendances at the elementary school. But these are mere idiosyncrasies, and should perhaps be regarded as pleasant interludes in the sordid realms of finance.

The withdrawal of arts. 5 and 18 (*b*) from the operation of the waiver provisions does not call for more than passing reference, for they have been practically a dead letter from the first. But the alteration by which a direct application may be made for waiver of arts. 23 and 24, which refer to the constitution of the governing body, is at first sight a distinct gain. Time alone will show whether this is more apparent than real. The Board, like Providence, seems to favour the big battalions, and the local education authority invariably carries too many guns for isolated units, such as any school making this application is bound to be.

Recent circulars show that there is apparently a sincere desire to relieve us of the overwhelming burden of form-filling and statistics-furnishing, which has been, like a snowball, ever growing. The forms which I have already filled up, am trying to fill up, and have yet to fill up are sufficiently appalling without anticipating such minor details as a fresh admission register in duplicate, with a whole page containing entries under seventeen heads for each boy, and *retrospective*, which has to be filled up at our

leisure—a comforting word this, with a true Mesopotamic ring—during the year.

Summing up, I should characterise the regulations as, on the whole, educationally good, but financially bad. Five pounds per boy looks well on paper, and with no hampering restrictions and conditions with regard to free places would do well enough; but with all that Recognition now brings in its train—loss of fees, a majority of representative governors, free stationery, optional subscription for games, &c.—nothing less than £10 per boy, with a guarantee that there shall be no further additions to the appendix, would be a fair equivalent for the part which such schools as ours are taking in the development of secondary education.

THE CLASSICAL ASSOCIATION.

THE annual meeting of the Classical Association was held this year at Birmingham, October 9th to 11th. Most of the visitors enjoyed the hospitality of the Birmingham people, and these had the pleasure of attending the play and the receptions. On the evening of the 9th the Lord Mayor held a reception at the Town Hall. On the next day a performance of the "Hippolytus" of Euripides was given in English, and the same evening the president's address was given in the Town Hall.

The "Hippolytus" was performed in the lecture theatre of the Midland Institute by members of Miss Horniman's London company. The performance was felt by all to be a success: the play made a direct appeal to the audience, and, except in the "machinery," it was surprisingly modern. The chorus consisted of six girls and a leader; the girls danced gracefully in the ancient fashion, where the feet do less and the hands and body more: and by an ingenious device the leader was made to recite the choral parts whilst the chorus danced. Although all the play was well done, special admiration is due to Mrs. Wheeler's Phaedra, a performance full of intensity and perfectly natural; Mrs. Wheeler's voice and enunciation also were beautiful.

The Town Hall was full to hear Mr. Asquith give the presidential address. He congratulated the association on what had been already accomplished, particularly in the reform of Latin pronunciation, which in a very short time had become normal in English schools. He then sketched the change which has come over the spirit of classical studies in the era of excavation, and paid his tribute to the achievements of Mr. Arthur Evans in Crete. But he added that literature was more than potsherds, and mentioned some of the literary finds of recent years. The most noteworthy point in Mr. Asquith's address was that it was given by Mr. Asquith; and more than one uttered a silent prayer that the British Government may be led to recognise the importance of all kinds of unremunerative research: man does not live by old-age pensions alone. After the address, Prof. Waldstein gave an exhibition of lantern-slides, showing some of the chief artistic treasures of Herculaneum, and expressed a hope that further excavation might not be long delayed.

These were the popular parts of the meeting: a word may be said of the more professional business. Prof. H. Browne, of Dublin, read a paper on the rendering of Greek lyrical rhythms, with gramophone illustrations. Prof. Mackail discoursed on "How Homer came to Hellas." So far as could be deduced from the paper, which was not in all parts definitely expressed, the author held that the "Iliad" as it is was written by one man, Homer, but it has certain later accretions; the "Odyssey" was due to "the same poetic movement," but whether to the same hand was left in doubt. Prof. Mackail tackles Homer from the literary side, like Mr. Lang.

Two reports were presented and adopted: one laying down a reformed scheme of Greek pronunciation, the other a course of Latin for schools. Apart from one or two points of detail, such as the confusion between η and ει, the scheme proposed is both scientific and practical: the accents were left alone, but we hope they may come under consideration again. The second interim report of the Curricula Committee was specially valuable, because it contained a large amount of digested evidence as to the value of Latin educationally for those who cannot give more than a little time to it.

It must be remembered that the business of the association is done in committees, which meet regularly, and discuss professional matters with great care and thoroughness. It would be difficult to overrate the importance of these professional discussions, which are something new in England: not only are various opinions collected, and methods described and compared, but those who discuss them learn from each other, and a beginning is thus made for future unity of plan and effort. The annual meeting has not time properly to discuss the reports presented to it.

HISTORY AND CURRENT EVENTS.

EVENTS are happening in the Balkan Peninsula with startling rapidity, and we cannot tell what the situation may be before these lines are published. Last month we were speaking of the revolution in Turkey, by which the old vicious system of government of that country was overturned, as it were, in a moment, and the "Young Turks" came into power almost without violence. Now Bulgaria has declared its complete independence, and will remain no longer subject to Turkey, even regenerated. Thus it is not against *bad* government that they are revolting, but against "foreign" government. It is a national movement. What, then, are the Bulgarians, who, by the bye, number not more than three-fifths of the population of the country now called after them? No one really knows; but they appeared from the East in the time of the Roman Emperor Justinian, and crossed the Danube about 670.

THEIR greatest king was Simeon (803–927), who established Christianity in the kingdom, and reigned almost from sea to sea across the peninsula. In 1019 they submitted to the Roman Emperor Basil II., but regained independence in the weakness of the Empire which culminated in the Fourth Crusade (1204). In 1396 they were conquered by the Ottoman Turk Bajazet I.—*i.e.*, some sixty years before the capture of Constantinople put an end finally to the Roman Empire in the East. Since then they have been subject, more or less, to the Sultans of Turkey. Thirty years ago Russia would have made Bulgaria an almost independent principality, extending to the Aegean Sea, but British jealousy of "the bear" confined it within narrower boundaries, and there has been trouble in Macedonia ever since. And now Prince Ferdinand has "torn up" or "trampled on" treaties, and has proclaimed Bulgaria once more an independent State.

ON the western side of the Balkan Peninsula, separated from the Adriatic only by the Austrian province of Dalmatia, are the two principalities of Bosnia and Herzegovina, inhabited by Slavs, which, after having for centuries been subject to Turkey, revolted some thirty years ago, and were handed over by the Treaty of Berlin

to Austria-Hungary for protection and administration. Bulgaria has always been regarded as a *protégé* of Russia, and therefore, as Ferdinand has proclaimed the independence of his country, Austria has replied by formally annexing Bosnia and Herzegovina. They are henceforward to have the same privileges as the other parts of the Austro-Hungarian Empire, local assemblies, and a share in the rights and duties of the other subjects of the Habsburgs. More than a century ago Catherine II. and Joseph II. planned a partition of Turkey. Is it now coming about?

If so, the kingdom of Servia will at least attempt to make its voice heard. Long the battle-ground between Hungary and Turkey, it achieved practical independence in 1829 after a fourteen years' struggle, and was formally declared independent in 1878. The kingdom has had a stormy career, both internally and externally. Economically, it is dependent on Austria-Hungary, and it has for neighbours on the east Roumania and Bulgaria, and on the west Bosnia and Herzegovina, or, as we suppose we must now say, Austria-Hungary. Against the growth of Bulgaria it fought in 1885–6, but now it is wedged in between its rivals, and it is not clear that it will be able to avoid its fate.

On these events it is interesting to read the comments of the *Times* newspaper. The rulers who have effected these changes are solemnly lectured on their breach of treaties, and told that unless European agreements are maintained lawlessness will follow and loss of international morality. Is, then, Metternich not dead yet? Or is his spirit still powerful? In the name of treaties and to maintain "law and order" he governed Austria-Hungary and Europe in general from 1815 to 1848, and the struggles of Portugal, Spain, and Italy to gain constitutional government, the revolutions of France, Belgium, and Greece, were all so many infractions of the providential rule of the universe as embodied in the great Chancellor. Yet he passed away almost without a struggle at last. And we are as far away from "Berlin" as he was in 1848 from "Vienna." This world *does* move.

ITEMS OF INTEREST.

GENERAL.

Among the many arrangements which are being made to welcome the American teachers who are visiting London, and to render their visit both enjoyable and useful, we notice that a reception has been arranged by the Assistant-masters' and Assistant-mistresses' Associations, which have joined forces on this occasion. The reception will be held at the Charterhouse on November 10th. A better choice of building could not have been made, both from the point of view of its antiquity and historical interest, and from its having been, down to a comparatively recent date, the home of one of our great public schools. The associations will invite as many guests distinguished in the educational world as possible to meet their visitors, and a short lecture on the Charterhouse will be given. We doubt not that many members of both associations will be present at what promises to be an interesting and pleasant function.

The Geographical Association, the chief object of which is the improvement of geographical teaching, has arranged to hold monthly meetings of members in London. The first meeting is to be held on Friday, November 13th, at 8.15 p.m., at the London Day Training College, Southampton Row, W.C. Mr. H. J. Mackinder, late director of the London School of Economics, has kindly consented to deliver an address to teachers of geography. Prof. John Adams, the principal of the London Day Training College, has agreed to preside. Non-members of the association interested in improved methods of geographical instruction are cordially invited to attend this meeting. Full particulars as to the aims and methods of the association may be obtained from the honorary correspondence secretary, Mr. J. F. Unstead, 39, Greenholm Road, Eltham.

The annual meetings of the Association of Assistant-masters will take place at St. Paul's School on January 6th, 7th, and 8th, 1909. The annual dinner will be held on January 7th at Pagani's Restaurant, Great Portland Street, W.

The Board of Education has informed the Education Committee of the London County Council that there is no objection to occasional whole-day country rambles for the senior classes of elementary schools, provided that a satisfactory time-table is submitted to the inspector and is approved by him. The question arose out of the experience of Wix's Lane School, Clapham, where half-day rambles, which have been permissible for some time, proved unsatisfactory and difficult to arrange. There has been an increasing necessity to devote Saturdays to competitions in connection with organised games; and, moreover, special reduction in fares are not granted by the railway companies on the Saturdays of the summer months. The whole-day excursions at the Clapham school are to be confined to Standards V., VI., VII., and ex-VII., and the number of outings is to be limited to six a year.

The annual general meeting of the Association of Teachers in Technical Institutions will be held at the St. Bride's Institute, Bride Lane, E.C., on November 7th, at 3 p.m. The president of the association, Mr. Chas. Harrap, will preside. The business of the meeting is to receive and discuss the annual report of the council, the financial statement, and receive the result of the election of officers and council for the ensuing year.

Extensive improvements and additions at Haileybury College were opened by Princess Alexander of Teck on October 17th. A bursar's house and a physical laboratory have been erected; the cricket pavilion and school shops have been enlarged; the dormitories have been opened out to admit of free ventilation; new lavatories, bath-rooms, drying-rooms, and servants' rooms have been added to each dormitory; all the sanitary appliances have been renewed, the drainage system entirely relaid with cast-iron pipes, and efficient outfall disposal work of the most modern type constructed. A block of twenty-six new form-rooms to accommodate from fifteen to twenty-six boys each has been erected, and eighteen old form-rooms have been converted into furnished house-rooms or studies, to accommodate from eight to ten boys each. Among other recent acquisitions are a new racket court and four fives or squash-racket courts. The total cost of the recent improvements has been more than £30,000.

Many changes are taking place in Canada from time to time. New territory is being opened for settlement, new centres of population are being established, and new railways are being built or projected. A Canadian atlas, to be of real use, must be up-to-date. Such an atlas is

now being distributed by the Canadian Government Emigration Department to schools throughout this country. The atlas has been well prepared, and is essentially and primarily a geography of Canada. It contains eight large modern maps of various parts of Canada, in addition to about sixty pages of text, illustrated profusely with good pictures. Teachers of geography and others interested can obtain the atlas, free of charge, on making application to Mr. J. Obed Smith, Assistant Superintendent of Emigration, 11–12, Charing Cross, London, S.W.

THERE is a growing consensus of opinion among leaders of educational thought and activity in England that drastic reforms are necessary in the elementary-school system if national progress is to be secured. A writer in the *Westminster Gazette* stated a few weeks ago that the early age at which exemption can be obtained from attendance at school, and the absence of discipline during the unguarded years of youth, when attendance at evening continuation schools should be compulsory, are responsible for the large number of casual labourers and the difficulties in finding employment for them. In a paper read before the Church Congress at Manchester, Prof. M. E. Sadler referred to this condition of things, which is a danger to the State and a discredit to our legislators He pointed out that modern methods of factory production make it profitable to many employers to use the comparatively unskilled labour of boys and girls, who have just left the elementary schools, in such a way as to use up an unfair share of the physical and moral capital of the rising generation. Children of thirteen or fourteen years of age find it easy to obtain work in which there is little mental or moral discipline, but for which they are offered wages that for the time look large and flatter the sense of being independent of school discipline and of home restraint. After a few years the lad, at the very time when he begins to want a man's subsistence, finds himself out of line for skilled employment and only too likely to recruit the dismal ranks of unskilled labour. This is one cause of premature unemployment.

AMONG the remedies which Prof. Sadler urged should be applied for the promotion of national welfare are the following. The large classes in elementary schools should be reduced to thirty or thirty-five. The leaving age, as in Scotland, should be raised to fourteen. For the rank and file of the pupils there should be much more practical and constructive work in the higher standards, and much less reliance upon oral teaching. For many of the pupils a simpler course of study would be more helpful intellectually. The number of old scholars' associations in connection with public elementary schools should be increased. Hearty encouragement should be given to any efforts which foster the healthy influence of corporate life in connection with continuation schools. Approved continuation classes should, wherever possible, be organised as part of the work of lads' or girls' social clubs. Local authorities and private benefactors may render an important service to the community by providing more playgrounds in town and country with proper supervision for organised games. Finally, Prof. Sadler considers that it will eventually be found desirable and necessary to lay all employers under a statutory obligation to enable their younger workers, up to the age of seventeen, to attend during the daytime or in the late afternoon courses of suitable instruction provided or approved by the local authority of the district.

DR. HENRY BOVEY, the rector of the Imperial College of Science and Technology, struck a high note at the recent distribution of prizes and medals in his first address to the students. He sketched in broad outline the manner of man he hopes the Imperial College will strive to produce. He, at least, has no desire to produce mere specialists. An education in facts, and even in laws and processes alone, cannot, he remarked, produce what we call the scientific mind. The man of science, he insisted, must possess powers of observation, concentration, imagination, the logical faculty, and last, but not least, the power of doing. The scientific man is first a man and then a man of science; and nothing which leaves out of sight his intellectual relations with his fellow-men of this and other generations, and, further, nothing which leaves out of sight his obligation to rule his life in accordance with the highest standards of health, of religion, and of morals, can fairly be called a good education. Particularly welcome was Dr. Bovey's insistence on the value of the corporate life of a college in developing the character of students, for, if report speaks truly, in days gone by the students of some of the constituent colleges have been rather "as sheep not having a shepherd," the men of one department knowing little or nothing of those in another. It is to be hoped, as the rector suggested, that every encouragement will be given to the promotion of clubs for mutual improvement and recreation, so that in this way the responsibilities of citizenship may be inculcated.

AT the conclusion of his address Dr. Bovey announced several gifts to the college. The Bessemer committee has provided for the equipment of the mining and metallurgical laboratories in the new building, the plans of which have been prepared by Sir Aston Webb, and the erection of which is to be commenced in the near future. Mr. Charles Hawksley has given £4,000 to equip and endow a hydraulic laboratory in memory of his father, in which it is hoped to investigate many problems of flow which have not been solved hitherto. Electrical engineering laboratories in memory of Lord Kelvin have been equipped and endowed. Finally, many valuable donations, too numerous to mention in detail, have been received from Canada and the United States for the college library and museums.

ON October 7th Mr. Herbert L. Storey, late High Sheriff of Lancashire, handed over to the Mayor of Lancaster, for the use of the town, an extension to the Storey Institute, which was built and equipped by his father, the late Sir Thomas Storey, Kt., in honour of Queen Victoria's Jubilee in 1887. As an expression of their gratitude, the past and present students have had a bust of the donor placed in the building.

IN his recent able presidential address to the National Federation of Assistant Teachers, Mr. H. Pearson dealt with the supply and training of teachers. He contended that the increased demand for teachers owing to the Education Act (1902) had now been met, that, in fact, the supply of trained certificated teachers was at the present time so far in excess of the demand that only 30 per cent. of those leaving training colleges this year had obtained appointments at the end of June, 500 in London alone awaiting employment. Mr. Pearson suggests that the demand for trained teachers should be increased by an immediate reduction in the size of classes in elementary schools, together with the gradual replacement of supple-

mentary by qualified teachers. Further, he proposes that the Board of Education should regulate the supply by fixing the number of pupil-teachers and bursars to be admitted in any one year. Basing his calculation on the data given in the memorandum issued by the Board of Education in 1907, but neglecting all provision for an increase in the number of children in average attendance or for the numerical increase of the total number of adult teachers, Mr. Pearson concludes that an annual supply of 8,100 qualified teachers is at present sufficient. To provide this number of adult teachers, 12,500 pupil-teachers and bursars would, he decides, be required. The estimate includes provision for the annual replacement of 3,500 supplementary by 2,500 qualified teachers.

It will be noted that Mr. Pearson suggests that the Board of Education should fix the maximum number of qualified teachers, and consequently of pupil-teachers and bursars, to be admitted in any one year. Such a system would require the Board to forecast the demand for teachers two or three years in advance, to compel unwilling local authorities to increase or decrease the number of pupil-teachers and bursars they may wish to employ, and to admit pupil-teachers and bursars in proportion to the child population of the various areas irrespective of the opportunities for supply and training. It is possible for the Board of Education under present conditions to reduce the number of qualified teachers admitted each year by raising the standard of qualifying examinations, but a change of this kind should only be made if it were certain that a sufficient supply of teachers would be forthcoming to meet future demands. Mr. Pearson's estimate of the number of qualified teachers required each year (8,100) is obtained by adopting the rates of wastage given in the Board's memorandum, with the further provision of 2,500 qualified to replace 3,500 supplementary teachers. Assuming that these rates of wastage are not too high, Mr. Pearson thus proposes to reduce the total number of adult teachers by 1,000 per annum. The fact that a number of certificated teachers were not able at once to obtain appointments on leaving training colleges this year does not of itself prove that the supply exceeds the demand even in this year, for the wastage of the next few months has still to be met. It may be added that no reference is made in the address to the cause of the temporary reduction in the number of children in average attendance, namely, the recent exclusion of many children under five years of age.

The Federated Associations of London Non-Primary Teachers will hold a conference, in conjunction with the Mathematical Association, at the Polytechnic, Regent Street, W., on Saturday, November 28th, 1908, at 3 p.m. An address will be given by Prof. J. Perry, F.R.S., on the Correlation of the Teaching of Mathematics and Science. The chair will be taken by Prof. G. H. Bryan, F.R.S., president of the Mathematical Association. A discussion will follow. Tickets of admission can be obtained from the hon. sec., Mr. P. Abbott, 5, West View, Highgate Hill, N.

In announcing the recent appointment of Mr. E. B. Ludlam to a science mastership at Clifton College, it should have been said that Mr. Ludlam has succeeded Mr. F. B. Stead, who was appointed to a staff inspectorship in the secondary branch of the Board of Education in August. Mr. Stead last February succeeded the late Mr. Shenstone in the charge of the chemistry department at Clifton.

SCOTTISH.

Lord Rosebery, in opening the new department of engineering in the Heriot-Watt College, Edinburgh, gave an interesting speech on trade competition, and the necessity for being thoroughly armed for the contest. Victory here, as elsewhere, he said, must rest with the most highly trained and educated. While highly praising the zeal and enthusiasm which lead so many youths to attend the evening classes after a day of hard toil in workshop or factory, he went on to say that the strenuous fight for supremacy on which they are engaged required that an increasing number of young people should give the whole vigour and freshness of their day to the work of study. Much of the success of German trade is generally ascribed to its army of highly trained specialists. These are employed in ever-increasing numbers by the great commercial and industrial firms, and even the smaller firms combine to support one or more for the purposes of their common needs. These men deal with new inventions, adapt them and develop them, or experiment in new directions suggested by them. If employers in Great Britain care to take a leaf out of the German book, then they will find in the new department of the Heriot-Watt College every facility for the training of such specialists.

Intimation has just been made that the written examinations for leaving and intermediate certificates will begin on Tuesday, March 30th, 1909. Teachers are again reminded that the Department discourages the haphazard presentation of pupils in isolated subjects. Every candidate presented should have some definite form of group certificate in view. After the close of the current session certain important modifications are announced in regard to science and drawing. Two well-defined standards will be recognised for a pass, instead of one as at present. The lower will represent the degree of attainment expected of candidates for the intermediate certificate, while the higher will be on a standard very considerably in advance of anything hitherto exacted. A pass in the higher grade should only be aimed at by pupils with a special talent or liking for the subject.

A new and important Circular has just been issued by the Education Department in regard to proposed modifications in the conditions governing the issue of leaving certificates. These have hitherto been awarded almost entirely on the results of the written examinations. In future the Department hopes to secure the active co-operation of the responsible teachers in deciding whether a pupil shall pass or fail, and to allow comparative excellence in one subject to compensate for weakness in another. The experience gained by the Department in awarding intermediate certificates on these lines has proved so satisfactory that it sees no reason for maintaining a different system in regard to the higher certificate. As this change will not become operative until the year 1910, expressions of opinion from those directly or indirectly interested will be welcomed, and all suggestions reaching the Department will be carefully considered. School authorities are also invited to submit curricula on the strength of which they desire that leaving certificates should be granted. While naturally every curriculum must be subject to the approval of the Department, a wide freedom of choice is to be allowed, and the only subject absolutely essential for every course is English on the higher standard. The Department recognises the necessity of maintaining some uniformity of standard as between the various curricula, and will take steps to have that secured.

The proposed new departure of the Department has so far met with very general approval. It brings the practice

of this country into line with that of Germany and America by making the issue of the certificate depend upon the verdict of both teachers and outside examiners. For many years past the examinations of the Education Department have had the entire confidence of the teaching profession. The results have, as a whole, been in remarkable accord with the personal verdict of the responsible teachers; but there have been exceptions, and it is just those cases that will be met by the new system. Teachers must welcome also the sweet reasonableness of the Department in practically saying, "Come now and let us reason together." They have, however, heard this invitation before, and but scant attention was paid to their representations. The official ear is apt to hear nothing save the sound of its own voice. In this instance, however, we believe there is a genuine desire for information from every side, and in view of the difficulties of standardising the various curricula, and shutting out "soft options," everyone will admit it is greatly needed.

THE School Board of Glasgow is taking a determined stand against the audit and surcharge clause of the Education Bill. It has already secured the support of the leading school boards, and the great municipalities, fearing that it may be their turn next, are also taking vigorous action against the clause. Indeed, it is apparent that some compromise on the question must be arrived at, or the progress and even the prospects of the Bill will be seriously endangered. In support of its case, Glasgow School Board has issued a strongly worded memorandum, basing its opposition on the grounds that the proposed clause is uncalled for; that it offers no check to extravagance; that it is an unwarrantable official interference between the ratepayers and their representatives; that it will cripple the action of the boards and check local initiative; and that it is one other step in the direction of putting all public bodies under centralised official control. Altogether, the document makes refreshing reading, and is one of the most vigorous and pointed attacks on bureaucracy that have been issued for some time.

THE annual meeting of the Educational Institute of Scotland was held this year in the Synod Hall, Edinburgh. The meeting was singularly uneventful and one of the shortest on record. The assured prospect of greatly improved tenure and superannuation conditions seemed to have dried up the usual springs of loquacity, and of grievances there appeared to be none. The membership of the Institute is steadily growing. There are now 11,000 members on its roll, and it is hoped that soon every teacher in Scotland will be found in its rank. Dr. Lowson, Rector, Stirling High School, was elected president for the ensuing year.

THE growing love of pageants in an age essentially practical, if not also prosaic, presents something of a paradox. The scientific spirit which is the *Zeitgeist* of our age has little in common with the "make believes" of these shows. They indeed probably represent the revolt of the mind against the hard material things of time and sense, and against the extreme pressure in these days of the world of reality. However this may be, it is certain that pageants are becoming increasingly popular with all classes of the community. Glasgow University was the scene last month of the latest pageant, and certainly no more appropriate setting could be imagined for such a function than the quadrangles of an ancient university. If the modern buildings are not "wet with the spray of the deluge," they are old enough in tradition to satisfy the most exacting demands, and the spectacle contained plenty of beautiful and stirring representations from the past history of the university, history which has also become part and parcel of the national possessions. The purpose of the pageant was to raise funds to develop Queen Margaret College Settlement, which aims at raising and succouring the dwellers in the city slums. The large crowds that witnessed the proceedings encourage the hope that the Settlement will substantially benefit.

IRISH.

THE list of exhibitions and prizes won at the last examinations, which was published this year by the Intermediate Board somewhat later than usual, is remarkable for the decided increase in their number as compared with last year. We are not in a position to say whether this is due to the adoption of what is called a standard mark for determining the number of exhibitions and prizes, but it may be observed that next year another principle is being adopted for this purpose.

THE number of exhibitions and prizes allotted in the various grades is as follows:

Senior Grade.—Boys.

£	Courses	Classical	Modern Literary (with Irish)	Modern Literary (without Irish)	Math.	Exp. Sc.	Total
40	Exhibitions	5	5	2	1	6	19
20	,,	2	1	1	19	9	32
3	Prizes	11	9	3	—	1	24
2	,,	—	—	—	—	2	2
1	,,	—	—	—	19	13	32

Girls.

40	Exhibitions	—	3	4	—	4	11
20	,,	1	—	1	3	—	5
3	Prizes	—	4	6	—	2	12
2	,,	—	—	1	—	—	1
1	,,	1	—	1	2	2	6

Middle Grade.—Boys.

25	Exhibitions	4	4	3	3	3	17
15	,,	6	14	—	19	24	63
3	Prizes	6	13	5	—	4	28
2	,,	1	11	—	—	5	17
1	,,	4	4	—	22	17	47

Girls.

25	Exhibitions	—	3	3	1	3	10
15	,,	—	3	5	2	3	13
3	Prizes	—	11	5	—	3	19
2	,,	—	1	2	—	2	5
1	,,	—	—	2	3	2	7

Junior Grade.—Boys.

15	Exhibitions	5	9	3	5	6	28
10	,,	13	42	7	48	41	151
3	Prizes	6	24	10	1	4	45
2	,,	5	20	2	—	17	44
1	,,	7	16	3	52	27	105

Girls.

15	Exhibitions	—	6	3	—	2	11
10	,,	—	14	23	3	7	47
3	Prizes	—	8	—	1	1	10
2	,,	—	7	2	1	1	11
1	,,	1	7	24	1	7	40

IN the list published this year the names are given for the first time of students eligible for exhibitions and prizes in more than one course. These students are only awarded one exhibition or prize, the names being printed in italics when they are entitled to an award in a second or third course. In the summary given above only exhibitions and prizes actually awarded have been counted. The summary

shows considerable disparity between the different courses, particularly among the girls, where a large proportion of awards goes to the modern literary courses. There is for girls a special need of a course which should include Latin and a modern language.

THE mode of publishing the lists so as to show that students are often eligible to an award in more than one course shows how right managers and schoolmasters were in agitating against compelling a student to declare before the examination in which course he would compete. It is clear that a large number are eligible in two or more courses. This lends greater weight to the contention of the schools that rule 14 (*b*) is unfair. There was a general impression that in answer to various protests and influential memorials the Board would have graciously withdrawn or postponed this rule, but unfortunately for its reputation for sagacity and common sense it at first refused to do so, and issued a memorandum to that effect. Appeals to Mr. Birrell were more successful, and under pressure from the Chief Secretary it is understood that the obnoxious rule will not be put into force this year. Replying to a question in the House of Commons, he very aptly stated that there are two points involved. The first is that the rule was published after the June examinations were over, so that it was impossible for students who intended to compete next year for prizes and exhibitions to withhold themselves from examination, and having now passed the examination they would most unfairly be debarred from competing next year. On this point there is clear ground for complaint of injustice, the students affected being nearly 1,000 in number and including many of the best pupils. The other point is as to the wisdom of the rule on grounds of general educational policy. About this Mr. Birrell said there was much to be urged from both sides. If, however, the Intermediate Commissioners are wise, they will agree with schoolmasters who are unanimously of opinion that the innovation is unsound.

THE new Universities Act was brought into operation by a Vice-Regal Proclamation on the last day of September. This does not, of course, mean that the new universities will be constituted at once. The university in Belfast proposes to call itself the Queen's University of Belfast, but even the name of the southern university is not yet decided. In order to enlighten the public on the present position of affairs, Dr. Hamilton, the president of Queen's College, Belfast, explains what is happening now in the transition period. The Queen's Colleges go on as before. All students now attending the colleges will become automatically, unless they otherwise desire, students of the new universities when the universities, as they will do, replace the colleges. But the universities do not, and cannot at present, enter upon active work, but must wait until the statutes and methods of procedure are settled by the Commission appointed for this purpose by the Act of Parliament. Finally, students who have entered or shall enter the Royal University will be entitled to credit in the new universities for any examinations which they pass there.

WELSH.

THE Shrewsbury conference of education authorities of Wales and Monmouthshire, convened by the Denbighshire Education Authority, discussed the advisability of requesting the Government to appoint a Minister of Welsh affairs and to establish a National Council of Education for Wales and Monmouthshire. It was argued that the establishment of a Welsh Department of Education had only accentuated the desire for a National Council. Welsh education committees have three authorities to satisfy—the Board of Education in matters relating to technical education and the instruction of pupil-teachers, the Welsh Department of the Board of Education in matters relating to elementary education, and the Central Welsh Board in matters relating to intermediate education. The appointment of a Minister for Wales and the establishment of a National Welsh Council would unify these various authorities. It was felt that a Minister for Welsh affairs would be able to advance the financial interests of Welsh education.

As the establishment of a National Council, in any case, would take time, representatives of county education authorities have met to consider the organisation of conjoint action amongst the local authorities. This conference of representatives passed a resolution affirming the desirability of establishing at once a Federation of Education Authorities for Wales and Monmouthshire. The conference appointed a provisional executive committee, together with two honorary secretaries and treasurer. The hope was expressed that the Government would see its way to make building grants to local bodies and relieve local rates; otherwise the danger was suggested that, if the cost of education continues to increase, it may become very unpopular.

THE President of the Board of Education (Mr. Walter Runciman) was present at the opening of the Towyn County School, the buildings of which have cost £3,850, and are planned for the accommodation of 170 pupils. Mr. Runciman said he hoped, before he ceased to be President of the Board of Education, to see the organisation of the training college system in Wales completed. The Government wished to provide for the Welsh children the best teachers, training colleges, and university that it is possible to secure. With regard to the Welsh secondary schools, Mr. Runciman said he was glad to find the Welsh secondary schools becoming more and more democratic and national, and that the Welsh language is now a vital and prominent part of the curriculum of most of the schools. On the other hand, Mr. Runciman saw faults in these schools in a too rigid uniformity and in the danger of the dominance of the examinational spirit.

DR. GILBERT MURRAY dealt with an extremely suggestive topic in delivering the inaugural address for the session 1908–9 at the University College of Wales, Aberystwyth. He discussed the effect on the future of the uprising of the new universities, and the leaven in society of a new and quite numerous class, alongside of the graduates of the older universities, all actuated by a sincere love of learning. "We shall," Dr. Murray said, "soon have a widespread and powerful class of what may be called, for lack of a better term, 'intellectuals,' who will no longer be drawn from nor be dependent on the privileged classes nor the great ecclesiastical societies. This class will have its own defects and narrownesses, but I cannot help looking towards it with hope for the future service of the community." The following directions of ameliorative social serviceableness were described: (1) the growing consciousness in such a class of higher aims than mere love of gain; (2) the recognition of women as fellow-citizens in contradistinction to the Oriental idea of regarding women as "property"; (3) an increasing desire and industry in all public questions to find out the truth, and then act on it; (4) fidelity, through all fears and threatening influences, to the love of knowledge.

THE following letter was received from the Board of Education and read at a meeting last month of the Swansea Education Authority: "The stipends of the teachers engaged in the Swansea municipal secondary schools are generally low, and in view of the increased grants under the new regulations, the question of raising them should receive consideration. At present it is difficult to retain the more experienced assistants, and several of the new teachers have had little or no experience of teaching."

THE medical officer to the Cardiff Local Education Authority, in reporting on his work of the last three months, says, of 734 boys examined, 591 had decayed teeth; of 780 girls examined, 681 had decayed teeth; of 1,223 infants examined, 865 had decayed teeth. "Dental decay," he adds, "is in most cases due to local infection, and may be prevented by antiseptic treatment, or, in other words, by cleanliness. Errors in diet are also responsible for a certain amount of dental decay; but in any case it is important to bear in mind that this decay may lead to serious physical defects, and that, for the most part, it can be prevented, or at any rate arrested, by proper care and treatment during the earlier portions of school life."

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

The Transitional French Reader. By R. H. Pardoe. xxii+327 pp. (Rivingtons.) 3*s*.—This is a very sound and careful piece of work, which should be welcome to reform teachers. It is, to quote the sub-title, "a French course based on the gradual introduction of the tenses, for the use of pupils who have already gone through an elementary oral course." It will probably be found convenient for the second year of instruction. Every page shows that it is the outcome of experience on the part of an exceptionally capable teacher. The extracts for reading are carefully chosen, the *questionnaires* are excellent, and the *vocabulaires* (containing, as they do, a minimum of English) also deserve praise. We believe this book will be of real service to teachers.

Tales by Erckmann-Chatrian. Edited by O. H. Prior. 84 pp. (Bell.) 1*s*.—This appears to be the first volume of Bell's Illustrated French Readers, and it may be stated at once that the illustrations are of real value, because "they bring in all the main incidents in the course of the story, which may thus be reconstructed by the pupil *viva voce* or in writing." This is a very good idea, and it has been well carried out. The printing also is neat and accurate. The notes, written in English, deal with the subject-matter or supply renderings of difficult expressions. There is also a vocabulary of words which a pupil might not know, with references to the place where they occur. The new series starts well.

Erckmann-Chatrian, Le Conscrit de 1813. Abridged and edited by O. B. Super. vi+210 pp. (Heath.) 1*s*. 6*d*.—It is convenient to have this capital story in an abridged form. A short biographical note is prefixed to the text, which runs to 150 pages. The notes run to only ten pages, and do not rise above the average of such work; occasionally the renderings betray the American editor. The vocabulary is complete; very occasionally the pronunciation is suggested, but no recognised system of phonetic transcription appears to be employed.

E. Souvestre, Les Bannis. Edited by E. Pellissier. xi+114 pp. (Macmillan.) 1*s*.—This is a good short story, furnished with satisfactory notes and a good vocabulary, as well as the usual appendices and a *questionnaire*. It forms a welcome addition to Mr. Siepmann's Primary French Series.

Petite Grammaire Française. By E. Renault. viii+131 pp. (Arnold.) 1*s*. 6*d*.—Mr. Renault was well-advised in issuing in a smaller form his "Grammaire Française." It is a convenient little volume, clearly printed; the rules are generally well expressed, and the examples chosen with care.

Scènes Enfantines. Eight Short Plays. By K. Weber. iv+82 pp. (Arnold.) 1*s*. 3*d*.—These plays are of varying interest and value; some of them are very childish indeed—for instance, "Le rêve de bébé." Possibly some teachers of little girls may like to try them. It is a pity that the book seems to have been passed through the press a little hurriedly, as there are more slips in the printing than one likes to see, especially in the matter of hyphens. The vocabulary is not quite complete. There are no notes.

Classics.

P. Terenti Afri Comoediae. Edited, with Introduction and Notes, by S. G. Ashmore. x+290+340 pp. (Oxford University Press, American Branch.) 6*s*.—We can speak with almost unqualified praise of this book. It contains the excellent Oxford text of Tyrrell, with his critical notes, reprinted almost exactly; the present editor adds a few critical notes of his own at the end. The introduction gives an eminently useful account of Greek and Roman comedy, and the chief Roman comedians, of Terence and his work, the antiquities of the theatre, in short, nearly all we want to know, except the verse. There is something said of prosody, but not nearly enough: its principles need to be explained very fully to those who have been made accustomed to scansion by quantity; and its relation to the word and sentence accents must be made clear by many examples. We should have also expected something said of the new fragments of Menander, which show his admirable power of drawing character, and are very lively pictures of life. The notes do something to remedy this, but not much. The notes are good: Terence is made to illustrate himself, and account is taken of the dramatic side. There is no parade of learning, but there is too much translation of simple words and expressions. A complete commentary to Terence was much needed, and now we have one that will just suit the university man. Perhaps it is too much to ask for an acting edition of Terence, but we should much like to see one, reproducing some or all of the famous miniatures, with hints from Westminster, and plans showing the position of the characters.

M. Antoninus Imperator ad se ipsum. Recognovit brevique adnotatione instruxit I. H. Leopold. Scriptorum Classicorum Bibliotheca Oxoniensis. No paging. (Clarendon Press.) Cloth, 3*s*.—It is time that a new recension of M. Aurelius should be published, and Mr. Leopold has already earned a right to speak on the subject. He has made a personal collation of the MSS., and in his critical notes he gives their chief readings along with a selection of proposed emendations made by various scholars. The book, like its fellows, is well printed. It is provided with two indices, one of quotations and one of proper names.

The New Latin Delectus. By W. Jenkyn Thomas and E. P. Doughty. Book I. 134 pp. (Marshall.) 1*s*. 6*d*.—This book is printed in good clear type, the long vowels being all marked. It contains notes and a vocabulary.

The notes are chiefly on antiquities and mythology alluded to in the text; the mythological notes are very full, and contain references both to English literature and to art. None deal with syntax. There are also a number of pictures of divine types, and a map: unfortunately, the names on the map are difficult or even impossible to read. The subjects are the stories of ancient Rome and Roman myths. The editors have selected the pieces "with a view to the better appreciation of English literature." The authors are Livy simplified, Horace, and Ovid. The book is well done, and the notes in particular are better educationally than most we have yet met with.

Plato's Apology of Socrates. Edited, with Introduction and Notes, by H. Williamson. xxxiv+116 pp. (Macmillan.) 2*s.* 6*d.*—We do not think another edition of the "Apology" was needed; nor do we approve of the excessive amount of help given by this. The English abstracts to each paragraph, for example, are educationally bad; and so are such notes as "ὥσπερ οὖν 'just as, in point of fact, or in reality,' σκοποῦντι agrees with μοι, ῥᾳδίως lightly," and so forth. Many of the notes are long, without the same justification as that on 26 D, ἃ ἔξεστιν, &c. Regarded as a book to take the place of a teacher, supplying everything that the learner could possibly want to know, it is good. We recommend schoolmasters to buy it, but we do not think it to be suitable for form use. If we grant the kind, it is certainly good of its kind. Mr. Williamson is a competent scholar, and his introduction and notes are thoroughly done.

English.

SIR WALTER SCOTT seems to be coming into his own again, even though it be by the school door. The Oxford University Press sends a delightful edition of *Rob Roy* and of *Woodstock*, well illustrated, and accompanied by a few notes and a glossary (2*s.* each), and Mr. Dent sends *Quentin Durward* and *A Legend of Montrose* (1*s.* 4*d.* each). From Messrs. Macmillan we have the immortal *Westward Ho!* (1*s.*), a marvel of cheapness, and an easy book to hold in the hand withal; and *Grimm, The Arabian Nights, Tales of a Grandfather*, and *Rip Van Winkle* all appear in the English Literature for Secondary Schools Series (1*s.* each). Blackie's English Texts have added to their long list Danett's version of Commines' *Warwick the Kingmaker* and Knolles' *Wars with the Turks*, both very little known and written in fine sturdy English; we wish Dr. Rouse would give us more Hakluyt. A fascinating edition of Sir Percy Fitzpatrick's *Jock of the Bushveld* (1*s.* 6*d.*) comes from Messrs. Longmans: a prize edition (3*s.*) ought to sell well also; it will be difficult to send boys home when the school is over if they happen to be reading these adventures of Jock. Messrs. E. J. Arnold add to their "A. L." Bright Story Readers the *Idylls of the King*, the *King of the Golden River*, and, *mirabile visu, Stories from Barbour's Bruce.* We always thought the Bruce a dull work until we saw this 4*d.* edition of it—compressed, it is true. Mr. Quiller-Couch continues his booklets for the Clarendon Press by *Scenes from Marlowe* (4*d.*); and Miss Lee has edited *Marmion* for Messrs. Horace Marshall and Son (1*s.*). Messrs. Ginn continue the New Hudson Shakespeare with an edition of *Julius Caesar.* No one who knows these Hudson books willingly uses others with classes; but 2*s.* is rather more than the old edition was. The beautiful Elizabethan Shakespeare (*Merchant of Venice* and *Love's Labour's Lost*, 2*s.* 6*d.* each) comes from Messrs. Harrap; it is as if one held the Folio in one's hand. Mr. Heinemann fills up the packet with a charming quartet—*My Uncle Toby, Sir Roger de Coverley, Reynard the Fox*, and *Brave Beowulf.* They look like gift books; their covers, colours, pictures, and editing are alike admirable. They belong to Every Child's Library, and they cost 1*s.* each. The editor is Mr. T. Cartwright. Some may avoid Reynard and Kaulbach, but only on special grounds, and the irony will not hurt the young. Kaulbach's pictures, too, have been, on the whole, carefully edited: still, Kaulbach is not for children, admirable though he is. Is it a vain hope that with all this revived interest in and publication of good literature some publisher may try to give us a geography or a history, even of a corner of the world, done in so fine a fashion as some of the books before us?

History.

The Teaching of History in Girls' Schools in North and Central Germany. A Report by Eva Dodge. 149 pp. (Manchester: University Press.) 1*s.* 6*d.* net.—This valuable report is the outcome of investigations made by Miss Dodge as a "Gilchrist travelling student" during the years 1903–4. It gives a clear and detailed account of two well-organised schemes of historical teaching in Germany, the one prepared for girls' elementary schools, the other for girls' higher schools. In each case Miss Dodge's plan has been, first, to describe the schools; secondly, to explain in general terms the methods of teaching adopted; thirdly, to present a table of the courses of instruction; and, finally, to give an account of some typical lessons at which she was privileged to be present. A concluding chapter summarises the leading impressions which Miss Dodge has received from her observations and inquiries. It appears that the Germans have very definite ideas of the end which history is to serve in their educational system. The great aim of the teaching is to be "the cultivation of patriotism," in which is included the inculcation of the duties of citizenship. Towards this end they work with a nice discrimination. They do not, for instance, have the same text-books for boys and for girls. The books used by the girls, and the lessons based on them, have "less military history, more notice of the life and work of women; less political, more social history." In one respect the *Lehrplan* of the German schools seems decidedly superior to the syllabus of some of our English examination boards: it sets its face against "periods" of history, and insists upon the teaching of the story of the country as a complete and connected whole.

History of Great Britain and Ireland, 1763–1815. By A. J. Evans and F. N. Dixon. xvi+269 pp. (Clive.) 2*s.* 6*d.*—The bulk of this book consists of chapters reprinted, with little alteration, from Messrs. Evans and Fearenside's "Intermediate Text-book of English History, 1714–1837," published ten years ago. There is, however, an "introductory chapter" of twenty-two pages dealing with the events of the period preceding the year 1763, and there has been a certain amount of editing and revision bestowed upon the later chapters. This, apparently, is Mr. Dixon's part of the work. But what has become of Mr. Fearenside's? One great improvement this reprint shows as compared with its original. It omits the majority of the multitudinous cross-references, "spatch-cocked" into the text, which gave the page an air of hopeless complexity. Another useful addition has been the insertion of boldly printed headings and sub-headings, which divide the subject-matter into convenient sections. The volume gives a thoroughly lucid, complete, and accurate account of the events of the period which it covers.

Illustrative History: Hanoverian Period. By J. W. B. Adams. xxxi+305 pp. (Horace Marshall.) 2*s.* 6*d.*—The extracts are of all kinds, contemporary and later, and there are besides some three dozen pictorial illustrations, an introduction containing an analysis of the sources, and a bibliography. The whole is exceedingly well done.

WE have received two specimens of "The Scholar's Cartoons," published by Franz Hanfstaengl (London), of which the price for school teachers and children is 7*s.* 6*d.* each, for the public 10*s.* 6*d.* They are accompanied by a typewritten enthusiastic notice, apparently intended for our use. The cartoons are undoubtedly good, but the publisher is mistaken in his apparent thought that he is a pioneer in the matter.

The Reign of Queen Anne. By Earl Stanhope. xvi+331 pp. (Murray.) 5*s.* net.—A reprint of a well-known history.

Geography.

Geography—Structural, Physical, and Comparative. By Prof. J. W. Gregory. Maps and illustrations. viii+305 pp. (Blackie.) 6*s.*—The geography book of to-day must lay great stress on the "human" note. The investigation of the structure of a region is not geography, but geology; the study of earth forms is not geography, but physiography; the inquiry into the habits of plants and their growth is not geography, but botany—and so on. When, however, we consider that because of the limestone nature of a plateau it grows grass, and is therefore responsible for the development of a pastoral people, we are studying the interrelation of man and his environment—in a word, we are reading geography. The fault we have to find with Prof. Gregory's otherwise most interesting book is that there is too much geology, too much physiography, and too little of the resultant effects on mankind—too much of the inorganic by itself, and too little of the organic in relation to the inorganic. It is all very well to say, as in the preface, that the author has "tried to state his facts without the use of geological terms"—in a word, has tried to avoid calling a spade a spade—it remains geology all the same. True, there are attempts to get away from this in the section called "Descriptive Geography," but it is continually cropping up. The book is a good book for a teacher with a geological bent, or, indeed, for anyone who wishes to get down to the bed-rock, so to say, of a good deal of the regional geography he may have to teach. We question whether it is suitable for class work, except perhaps for the highest forms, and even then its geological bias must be provided for. For the rest, it is well illustrated, shows plenty of maps (of which all are not equally satisfactory), is sound on the Gulf Stream theory, and has a good index. The four parts into which its table of contents divides the book are severally entitled: "The Earth—its Structure and Materials," "Earth Forms and how they are Made," "The Influence of the Atmosphere and Oceans," "Descriptive Geography." There is a little economic and no political geography.

Climate. By R. de Courcy Ward. xv+372 pp. (Murray.) 6*s.* net.—Meteorology, as generally expounded, seems to the general reader the dreariest of subjects. That it may be made of absorbing interest to those not specially trained in the technicalities of the science is shown by this recent volume of the Progressive Science Series, in which Prof. Ward considers especially the relation of climate to man. On this aspect of the subject the author collates in masterly fashion a mass of material which has hitherto been scattered through a wide range of geographical and other publications. The result is a series of chapters on the hygiene of the zones and on the life of man in the tropics and in the temperate and polar zones respectively, in which the dependence—even now—of mankind on the weather is shown with disconcerting clearness. Throughout the book, however, Prof. Ward keeps the scientific principles of climatology well in the foreground of the picture, and applies them with notable success to the explanation of the characteristics of the various climatic zones. Teachers and students of physical, as well as of commercial, geography, will find the work of the greatest value for supplementary reading and reference.

Mathematics.

A New Algebra. By S. Barnard and J. M. Child. Vol. i., containing Parts I., II., and III. With Answers. x+371 pp. (Macmillan.) 2*s.* 6*d.*—We have read this text-book with more than ordinary interest, and while we think that experience will suggest modifications in detail, we are in almost complete agreement with the authors in regard to the general development. A careful discussion, like that given in Part I., of the meaning of the processes of common arithmetic and the introduction of letters as representing ordinary numbers is, in our judgment, a simple necessity as a preliminary to the consideration of positive and negative numbers; we do not think that teachers have sufficiently realised how much work that usually passes for algebraical is merely arithmetical, and how greatly the right understanding of algebraic form is assisted by the study of the generalised arithmetic of ordinary numbers. The exposition in Part I. is on a high level of excellence; if we might venture a criticism, it is that we think room should have been found in it for the treatment of fractions. We have little doubt that the authors have considered this aspect, but we think that the generalisation involved in the fraction should receive formal consideration before that of the positive and negative number. Even as it stands, however, the course developed in Part I. is admirable, and, wide as is the range of illustrations, the range could be still further extended. Part II. discusses zero and negative numbers (why not *positive and negative?*). The exposition is good, in some respects very good, but perhaps not quite so good as it will appear in a second edition. Equations of the first degree are introduced at an early stage, and both in Part I. and in Part II. receive careful and satisfactory treatment. Part III. is entitled "Rational Numbers," and naturally the fraction in its general form comes in for discussion, all matters of principle receiving adequate attention. Quadratic equations form the limit of the present volume. We have noticed chiefly the points in which the book presents a marked difference from current elementary text-books, but we must not forget to state that it is rich in examples of a varied character, and is admirably fitted for school purposes in virtue of its examples, apart altogether from its special merits as a logical and common-sense introduction to algebra. The book is probably not the final form of a school algebra, but it embodies so much of the intelligent and logical generalisation of arithmetic, along with a numerous and well-chosen collection of exercises, that we heartily recommend it to the consideration of teachers.

Blackie's Elementary Modern Algebra. By R. C. Bridgett. 192+(Answers) 39 pp. (Blackie.) 1*s.* 6*d.*—This elementary text-book is constructed on sensible lines, and is supplied with many easy examples, including examples on graphs. The discussion of negative quantities

on pp. 8 and 9 does not strike us as particularly good, but the rules of operation are clearly stated. The introduction of the remainder theorem is, in our judgment, unsuitable for such an elementary course, and the exposition given does not seem to us to be very happy. As a systematic collection of examples the book is quite good, but as an exposition of algebra it does not, we think, rank very high.

McDougall's Girls' Arithmetic. Book I. (for Class IV.). 72 pp. Paper covers, 4*d.*; cloth covers, 5*d.* Also Teacher's Book. 144 pp. 1*s.* 3*d.* net. (McDougall's Educational Company.)—The series, of which Book I. is to hand, consists of three books for the upper classes in girls' schools. Special attention is given to matters that should be of interest to girls—arithmetic as required in household affairs, shopping, marketing, and generally in occupations in which girls and women are largely employed. The Teacher's Book contains on the left side of the openings the pages of the pupil's book, and on the right side answers, additional exercises, hints, &c. There is ample practice in all the ordinary arithmetic that girls may be called upon to perform, and if they successfully accomplish the work put before them in this book they should have no difficulty in the calculations they are likely to meet with in practical life.

Examples in Practical Arithmetic. Compiled by J. L. Martin. Part II. 124 pp. (Murray.) Paper covers, 6*d.* —Like Part I., noticed in The School World for July, 1908, p. 276, this part is based on Consterdine and Andrew's "Practical Arithmetic," and provides a collection of useful examples that illustrate the methods of that work.

Pitman's Correlated Arithmetic. Book III. Also Answers, Notes, Oral Work, &c., Book II. By T. W. Trought. (Pitman.) Book III., paper, 3*d.*; cloth, 4*d.* Answers, &c., II., 1*s.* net.—In this series diagrams are freely used, and the questions are mainly concrete in character. It should be possible, with these books as guide, to give thorough training in the arithmetic of everyday life.

Practical Arithmetic and Mensuration. By Frank Castle. viii+249 pp. (Macmillan.) 2*s.*—For pupils in continuation schools and in technical classes this seems to us to be an excellent text-book. The subject is presented in a thoroughly interesting manner; arithmetic is brought into close association with elementary algebra, simple geometrical theorems are illustrated in connection with mensuration, and the examples are of a kind to appeal to the student. The book contains both a detailed table of contents and a good index, so that it is easy to find the rules and formulæ discussed in the text.

Science and Technology.

Lessons in Hygienic Physiology. By W. M. Coleman. 266 pp.; illustrated. (New York: The Macmillan Co.) 3*s.* —The author's aim has been to simplify physiology without weakening the presentation of its three essential principles—the biological principle of environment, the chemical principle of oxidation, and the physical principle of energy; and the subject is approached throughout from the point of view of health, thus making prominent the vital interest which each pupil has in investigating it, and the utility of the knowledge which he can thus acquire. The introduction is followed by eight chapters dealing with the skin, the skeleton, the muscles, the circulation, the respiration, food and digestion, and the nervous system in succession. Each lesson is followed by a table of questions and exercises by which the teacher may test the extent to which facts and their inferences have been absorbed and appreciated by the class. Mr. Coleman is no half-hearted preacher of the simple life: all stimulants—coffee and cocain, tea and tobacco, strychnine and alcohol—are banned by him, but alcohol is *the* accursed thing; and all drugs might be abandoned if only folk would eat and drink and live as wisely as they should. The book is written in a terse, emphatic, and arresting style, illustrated now and again by anecdotes and Press cuttings rather suggestive of the lecturer's platform. Paper and print are good, and the numerous illustrations are far and away the best and clearest of any which we have yet met with in a work of similar scope and size. Though spelling and diction occasionally strike the English eye as unfamiliar, if some of the arguments employed suggest the special pleader, and some of the analogies are strained, the book contains a store of useful teaching well arranged and admirably enforced; nor would the most critical of readers be inclined to question the genuineness of the author's enthusiasm or the loftiness of his aims.

Baillière's Popular Atlas of the Anatomy and Physiology of the Male Human Body. (Baillière, Tyndall, and Cox.) 3*s.* 6*d.* net.—This atlas consists of a number of superposed coloured plates, 14½ inches long, which, when raised in succession, display the chief systems of organs in the approximate order in which they would be revealed by dissection. Each plate is provided with an index by means of which the features represented may be identified. The device will be a distinct help to the imagination of those students—the great majority—who have no opportunity of practical work in human anatomy. Bound up with the plates is an admirable *résumé* (23 pp.) of the anatomy and physiology of the human body, by Dr. Hubert E. J. Biss. The atlas may be recommended with confidence.

S. D. S. Dental-Hygiene Charts. 54 in. by 38 in. (W. and A. K. Johnston.) 12*s.* each; the set of three charts, 30*s.*—These charts, which have been prepared by the School Dentists' Society, are admirable in scope and execution. No. 1 shows the number and form of the temporary teeth; No. 2 illustrates the nerve-supply of the teeth, as well as stages in the development of caries; and No. 3 shows the relation of the permanent teeth to the temporary set. A facsimile reduction with descriptive letterpress is given gratis with each chart, or may be purchased separately for 6*d.* It would be well if such charts were on the walls of every schoolroom; they would do much to spread sound ideas on a question which affects the public health to a greater extent than is generally recognised.

The Soil: an Introduction to the Scientific Study of the Growth of Crops. By A. D. Hall. Second edition, revised and enlarged. xvi+311 pp. (Murray.) 5*s.* net.—Mr. Hall is the leading British authority upon the chemical, physical, and biological considerations involved in the scientific study of soils. His book, the first edition of which was published in 1903, is accepted as the standard work upon the characters and properties of soils, with particular reference to plant growth. In connection with nature-study, and wherever rural education signifies something more than empiricism, the book should be in the hands of the teacher and senior student. Not only the scientific agriculturist, but also the physicist, chemist, and

biologist will find the volume full of interesting facts and conclusions. As a text-book or a convenient work of reference, the volume stands alone, and we trust its use and influence will continue to extend.

Fairyland Lane (A Nature Story). By Margaret Cameron. 130 pp. (Pitman.) 10*d*.—A pleasant little story of children and country life, illustrated with unusual excellence.

MASTERS and mistresses responsible for practical work in science should procure and study the new illustrated catalogue of balances, scales, and weights recently issued by Messrs. F. E. Becker and Co. The excellent illustrations and the tabular arrangement of sizes, prices, and other data make reference to the catalogue pleasant and easy.

MESSRS. JOHN J. GRIFFIN AND SONS, LTD., have published a price-list of organic and inorganic chemicals and volumetric solutions manufactured by Mr. C. A. F. Kahlbaum, of Berlin, which they are prepared to supply without any delay.

Miscellaneous.

The Perfection Fountain Pen. The Red Lion Manufacturing Co., Ltd., 71, High Holborn, W.C. 6*s*. 6*d*. to 4*s*.—This extremely simple pen seems to combine all the advantages which one reads of in the advertisements of other makes of pens. It certainly writes well and easily, and, *mirabile dictu*, it really fills itself as the prospectus says it will. By simply pressing a small metal plate inserted in the handle, the reservoir is at once filled with ink without any bubbles of air; the flow of ink is regular, and there is no necessity to shake the pen when one begins to write. This easy self-filling pen is really a boon, for by dipping the point in any ink-pot and pressing, the additional supply is at once obtained. The same pressure with the nib out of the ink-pot empties the reservoir, and the pen can be laid aside indefinitely. The different types of nibs are iridium pointed, and glide smoothly over the paper, and there are many varieties of this patent, as may be seen by consulting the catalogue of sixteen pages. In these days, when our open markets bring us in such close contact with competitive neighbours, it is most refreshing to find this English pen on the French market, and to read the business-like French catalogue which the Red Lion Co. has issued.

Stories from the Old Testament. By S. Platt. 239 pp. (Harrap.) 1*s*. 6*d*.

Heroes of Israel. By Mrs. F. S. Boas. 122 pp. (Horace Marshall.) 1*s*. 4*d*.

Both these books are beautifully illustrated; many of the best Bible pictures of modern times are reproduced; but Mrs. Boas is not a success as a story-teller. Miss Platt does not attempt to paraphrase the Bible language; she keeps as closely as she can to it, and a child could read her book for itself.

Old Testament History. By Geo. Carter. 310 pp. (Clarendon Press.) 2*s*.

Old Testament History from Hezekiah to the End of the Canon. By J. M. Hardwick and H. Costley White. 244 pp. (Murray.) 2*s*.

Both of these appear to be sound books. Both avoid critical questions, and avail themselves, wherever possible, of the Bible narratives. Messrs. Hardwick and White are at pains to interweave the message of the prophets, Lamentations, and Psalms. Mr. Carter is too full of information to have room for either Psalms or Job.

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.*

Assistant-mistresses and the Endowed Schools (Masters) Act.

MAY I direct your attention to an important point connected with the Endowed Schools (Masters) Act? As women are not expressly mentioned in the Act, some uneasiness may, I think, have been felt by assistant-mistresses, who have naturally feared that their interests were not protected by the Act. Will you, therefore, kindly allow me to make public the action which has been taken by the Association of Assistant-mistresses, whereby the position of women is now adequately safeguarded?

In the name of our association, I wrote to the President of the Board of Education directing his attention to the omission of any direct reference to women in the Endowed Schools (Masters) Act, and asking whether the provisions of the Act covered women teachers in boys' and girls' schools, or whether it would be necessary to amend this present Act in order to put them on the same footing as masters.

The following is the reply I received from Whitehall:

Whitehall, London, S.W.
July 15th, 1908.

DEAR MADAM,

In reply to your letter of the 14th instant, I am desired by Mr. Runciman to say that the provisions of the Endowed Schools (Masters) Bill will apply to all mistresses teaching in endowed schools which come within the definition set out in clause 3 of the Bill.

I am,
Yours faithfully,
G. E. P. MURRAY.

I may add that this pronouncement has been confirmed by other expert authorities whom we consulted, who assured us that as women were undoubtedly covered by the Interpretation Act, any amendment to the Act would be unnecessary.

EDITH M. BANCROFT.
(President of the Association of Assistant-mistresses in Public Secondary Schools.)

Moral Instruction.

THE Press in general has been so generous in its reports of the International Moral Education Congress recently held, and has perceived so clearly its great significance, that I venture to ask you, in view of the wide interest that has been created in the cause of the moral education of the young, to allow me to direct attention in your columns to the work of the Moral Instruction League, which exists to give practical effect to the promotion of the cause for which the Congress was held.

The League has influenced already the Board of Education to make some provision for moral instruction in public elementary schools, and some sixty local education authorities to take action in the direction of providing in their schools for more or less systematic moral instruction. Its "Graduated Syllabus of Moral and Civic Instruction for Elementary Schools" (a copy of which I shall be glad to send gratis to your readers on receipt of a post-card) has already been very widely adopted, and its moral-lesson

books, adapted to the various ages of children, have been welcomed by all, since they present moral ideas to children in ways that cannot fail to interest them, and give offence to none, since they keep strictly to that neutral moral ground which is common to all theological and non-theological bodies.

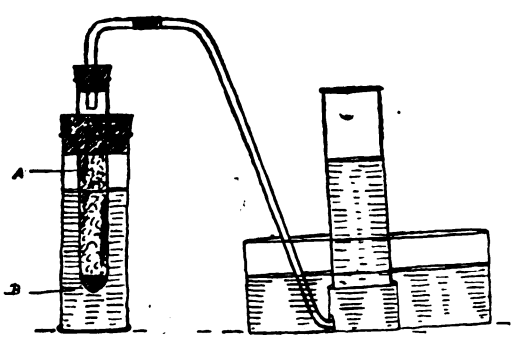
I shall be glad to supply further information about the League to any desiring the same.

HARROLD JOHNSON
(Secretary of the Moral Instruction League).
6, York Buildings, Adelphi, London, W.C.

Safe Preparation of Hydrogen.

THE teacher of practical chemistry has usually a considerable amount of anxiety while young pupils, especially in large classes, are preparing and experimenting with hydrogen. The following method of obtaining the gas, though it can lay no claim to originality except in its application to class-teaching, is very convenient, and, so far as I am aware, is not well known. There is no danger of an explosion, and even the youngest and most careless pupils can be left without supervision.

The hydrogen generator, A, consists of a piece of glass tubing about 14 cm. in length and 2·5 cm. in diameter, and is drawn out at one end until about 0·5 cm. in diameter. This end is plugged loosely with glass wool, and the tube is filled with granulated zinc. The glass cylinder, B, is provided with a cork through which the tube A passes,



and is half filled with dilute sulphuric acid. The apparatus is fitted up as shown in the diagram. The hydrogen is evolved steadily, and the supply of gas can be regulated by raising or lowering the tube A, which will remain in any position provided it fits tightly in the cork. The whole apparatus is made easily, stands firmly, and is very portable. A supply of gas is obtained at once by simply lowering the tube containing the zinc into the acid. Other gases can be prepared very conveniently in the laboratory in this manner—*e.g.*, nitric oxide, replacing the zinc with copper turnings and the sulphuric acid with nitric acid of medium strength.

O. F. K.
Leeds.

Volumetric Combination of Hydrogen and Oxygen.

WE are probably not the only science teachers who have had difficulty with this experiment, and the following points may be of interest to others.

(i) The common **U**-form of eudiometer is now sold with a tap bored with two holes, one passing obliquely from the side of the barrel to the end of the projecting shank, and one at right angles to the barrel. This second hole is not only unnecessary, but is an almost certain cause of leakage; and the experiment will be much more satisfactory if it be blocked up and the gases admitted by the obliquely bored hole only.

(ii) The success of the experiment depends very largely on the length of time allowed for the gases to mix after entering the apparatus. Exploding at once almost invariably leaves some gas unburned.

(iii) As the oxygen sold in cylinders frequently contains a considerable proportion of nitrogen (sometimes as much as 30 per cent.), it is important, if such a supply be used, that the oxygen be present in sufficient excess to compensate for this.

These are small points, but we do not remember having ever seen them in print.

H. G. WILLIAMS,
G. SHEACH.
Robert Gordon's College, Aberdeen.

Experiment on Radiation and Absorption in the Spectrum.

THE following simple modification of an old experiment conveys the meaning of the dark lines in the solar spectrum better, I find, than any amount of explanation.

The collimator of a spectroscope is directed toward the filament of a Nernst lamp, and a Bunsen flame is arranged between the spectroscope and the lamp. Brine is dropped as needed upon a piece of asbestos held in the Bunsen flame.

A spectroscope was first focussed so as to give the double sodium line sharply, the Nernst being off. Then the Nernst was switched on, and as it was heated it was noticed that we had successively the three following phenomena:

(1) Two bright sodium lines on a pale continuous spectrum.

(2) A lineless continuous spectrum.

(3) Two black sodium lines on a bright continuous spectrum.

By the further use of the Bunsen, asbestos, and of a reflecting prism in front of the slit of the spectroscope, it was also arranged in another experiment that in the bottom half of the spectrum we had two bright yellow sodium lines for comparison all the time.

ARNOLD MERRICK.

The School World.

A Monthly Magazine of Educational Work and Progress.

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PRACTICAL INTRODUCTION OF LOGARITHMS.

By Prof. G. H. BRYAN, F.R.S.
University College of North Wales, Bangor.

IT appears to be a curious fact in the history of mathematics that logarithms were discovered long before the Theory of Indices was perfected. It is a still more curious fact that in the methods adopted until quite recently in teaching mathematics, the use of logarithms for facilitating numerical calculation has been postponed until the pupils have learnt a large amount of technical matter in algebra, often extending to the binomial theorem, and generally including a great deal of abstruse discussion on indices. In the attempts recently made to reform the teaching of mathematics much has been done to simplify the teaching of logarithms, but the old "index" method seems still to have survived, and the attempts have mainly taken the form of making the pupil construct tables of *antilogarithms* by calculating successive powers and roots of some number, such as 10 or 1·0001.

Now I have always held the opinion that the use of logarithms might be taught by means of the multiplication property long before powers and indices are studied. The following remarks are made without prejudice to anything else which may have been written on the subject, and without any claim to priority.

There is no reason why even mathematical "babes and sucklings" should not learn the use of slide rules. As soon as a child can begin to count it can be taught to count the divisions on a scale or ruler. By taking two such scales, one of which can slide along the other, we have an "addition slide rule." By putting the 6 of one scale against the 0 of another, the child can be taught to say his addition table, $6+1=7$, $6+2=8$, $6+3=9$, and so on. I think if pupils in elementary schools were taught addition in this way they would learn much more easily and take much greater interest than they do at present. A mammoth rule several feet long, large enough for the whole class to see at the same time, would be useful. There is no reason why children should not be made to construct slide rules for themselves.

When it comes to learning the multiplication tables, a multiplication slide rule, or slide rule proper, going up to 10 times 10, could be provided, and the children taught to read off the rule $7\times1=7$, $7\times2=14$, $7\times3=21$, $7\times4=28$, and so on. The divisions on this rule should simply represent the numbers from 1 to 100.

A pupil who has learnt his tables in this way, and has been allowed to play about with slide rules from his earliest days, will have no difficulty in using them when he comes to do the ordinary so-called rule of three questions. For the men mowing the acres he calls one scale men and the other scale acres. The teacher can write "men," "acres" on the blackboard. He places "6 men" against "10 acres," and reads of "9 men" against "15 acres," and so on. The pupil may learn to do the calculation by arithmetic at the same time.

Such a pupil will be ready to learn the use of logarithm tables at the earliest possible opportunity. He soon finds that the slide rule has its shortcomings when any long multiplications have to be performed, because to multiply any but small numbers the scale would have to be made of an inordinate length, and the numbers would have to be crowded too close together. He is now taught that to get over the difficulty tables are made giving the *lengths* of the divisions of the slide rule, measured from 1 up to the various numbers, and these lengths are called the *logarithms* of the numbers.

But before we can measure lengths we must have some scale of measurement. (This fact will certainly have been taught him, according to modern methods, long before it is wanted for the present purpose.) In other words, we have to decide to begin with what length we are going to call "One." Now by far the most convenient plan is to take as the unit the length from 1 to 10. Take, then, a ruler and mark off on it divisions of this length and call them 0, 1, 2, 3, . . . Place the 0 opposite 1, the 1 opposite 10. Then the 2 of the scale will be opposite 100, the 3, if the scale were long enough, would be opposite 1,000, and so on. Thus every number between 1 and 10 will have a logarithm between 0 and 1, that is, a pure decimal; every number between 10 and 100 will have a logarithm betwen 1 and 2, that is, 1

followed by a decimal, and so on; moreover, it is easy to verify by measurement on the scale (or more precisely from the property that the part of the scale from 10 to 100 is an exact copy of the part from 1 to 10) that the decimal part of log 2 is the same as the decimal part of log 20, and so on. The tables are now placed in the hands of the pupil, and he learns to take logarithms and perform multiplication and division sums with them.

Opinions will necessarily differ as to the extent to which the slide rule should be used in teaching logarithms; moreover, a great deal will also depend on the previous training of the pupils to whom the subject is being introduced. At the present time it is probable that algebraic methods of treatment will appeal more to the average pupil, trained as he has been in the past, and these methods will certainly have to play an important part in the teaching in every case. Let us now, therefore, give a short sketch of a chapter on the algebraic treatment of logarithms, and the way they lead up to the properties of indices. We commence, then, with the following definition.

A system of logarithms of numbers is a series of numbers associated with them, defined by the property that the logarithm of the product of two numbers is equal to the sum of the logarithms of the factors. In other words, if we want to multiply two or more numbers together, we look for the entries opposite these numbers in a table of logarithms, add these together, and then look out the number against which the corresponding entry stands (or if preferred use a table of anti-logarithms).

Algebraically, then, a system of logarithms is to be defined by the property that

$$\log(ab) = \log a + \log b \quad . \quad . \quad . \quad . \quad (1)$$

for all positive values of a and b.

A system of logarithms was discovered by Napier, who also discovered how they could be calculated, and drew up tables of them. His discovery practically led to the following conclusions, which we regard as our *fundamental assumptions*:

A system of logarithms exists, defined by the property (1), and in such a system every positive number, integral or fractional, has a logarithm which can be calculated to any required degree of approximation, and conversely a number can be found the logarithm of which has any given value.

Now if we multiply (1) by 2 or by any number m, or divide it by any number n, we get—

$$2\log(ab) = 2\log a + 2\log b$$
$$m\log(ab) = m\log a + m\log b$$
$$\frac{1}{n}\log(ab) = \frac{1}{n}\log a + \frac{1}{n}\log b,$$

showing that the multiplied or divided logarithms possess the same properties as the original logarithms themselves. In other words, from the original system of logarithms we can get any number of new systems all possessing the same property, by simply multiplying or dividing our system of logarithms throughout by different numbers. In this way we can find a new system of logarithms in which the logarithm of any given number N is equal to unity. To do this we only have to divide all the logarithms of our first system by the logarithm of N in that system. The divided logarithm then evidently becomes 1. The different systems correspond to different scales of measurement in reading off the marks on a slide rule. The number the logarithm of which is unity in any system is called the *base* of that system.

In tables of logarithms the decimal system is adopted. The base is 10, so that the logarithm of 10 is 1. Thus we have:

$$100 = 10\times 10 \quad \therefore \log 100 = \log 10 + \log 10 = 2$$
$$1{,}000 = 100\times 10 \quad \therefore \log 1{,}000 = 2+1 = 3$$
$$10{,}000 = 1{,}000\times 10 \quad \therefore \log 10{,}000 = 3+1 = 4$$

and so on. Again:

$$10 = 10\times 1 \text{ giving } 1 = 1 + \log 1, \therefore \log 1 = 0.$$

Further, if we know, *e.g.*, that $\log 2 = 0{\cdot}3010300$, we easily show that $\log 20 = 1{\cdot}3010300$, $\log 200 = 2{\cdot}3010300$, and so on. Thus the advantages of the decimal system are easily explained, and the rules for taking logarithms from the tables can be taught in the ordinary way and applied to multiplication sums. It is best in the first case to employ examples involving numbers greater than unity, the logarithms of which are positive. The advantages of logarithms are shown as soon as it is necessary to multiply *three* factors together.

Putting $b = c/a$ we deduce from the multiplication law $\log c/a = \log c - \log a$, and lead up to the properties and methods exemplified in the cases of $\log 0{\cdot}2 = \bar{1}{\cdot}3010300$, $\log 0{\cdot}02 = \bar{2}{\cdot}3010300$, and so on, including the property $\log 1/a = -\log a$.

By repeated application of the multiplication property

$$\log ab = \log a + \log b$$

we obtain the rule for the calculation of squares, cubes, and other powers,

$$\log a^n = n\log a.$$

The logarithmic method of calculating roots could perhaps be best introduced by first asking what is the number the logarithm of which is half the logarithm of a given number a? According to our fundamental assumption some such number must exist. Then we should say $\log b = \frac{1}{2}\log a$, $\therefore$ $2\log b = \log a$, $\therefore \log b^2 = \log a$, which is satisfied if $b^2 = a$, that is, if b is a number the square of which is a. Such a number is called the square root of a. Similarly the number the logarithm of which is one nth of $\log a$ is an nth root of a, and so on. In this way all the properties of logarithms can easily be developed without assuming the corresponding properties of indices.

When it is considered desirable to teach the theory of fractional and negative indices, that subject will appear far more intelligible and less alarming if the pupil is already familiar with the practical use and working of logarithms. Of course in the case of negative *integral* indices it is very useful to obtain an interpretation by con-

tinuing the series $a^2\ a^3\ a^4\ \ldots$ backwards (*a*) by noticing that each term can be got by dividing the next following term by a, and (*b*) by continuing the series of indices backwards, giving—

$$(a)\quad a^4\ a^3\ a^2\ a\ 1\ \frac{1}{a}\ \frac{1}{a^2}\ \frac{1}{a^3}$$

$$(b)\quad a^4\ a^3\ a^2\ a^1\ a^0\ a^{-1}\ a^{-2}\ a^{-3}.$$

But even here, and still more in the case of fractional indices, it is desirable that the connection with the logarithmic properties should be clearly understood at the outset.

We might, for example, start thus: a^m means the product of m factors equal to a. We cannot, of course, multiply a number by itself half or one-third of a time, so this definition is inapplicable to $a^{\frac{1}{2}}$. But we have seen that a^m is the number the logarithm of which is m times log a, and there is no reason why we should not define a^m by this property when m is negative or fractional. Then putting $m=1/n$ we should call $a^{1/n}$ the number the logarithm of which is one nth of log a, and this we have shown to be the nth root of a. And similarly for negative indices.

I think, however, that this method may throw the relation of logarithms to their base too much into the background, and that it may be better to introduce logarithms to an arbitrary base a, when the pupil is familiar with the working of ordinary logarithms. Defining the base a as above by $\log_a a=1$, we deduce from above $\log_a a^2=2$, $\log_a a^3=3$, $\log_a a^n=n$, showing that the logarithm of a power of a to base a is the index of that power, and conversely a^n is the number the logarithm of which to base a is n. There is no reason why we should not extend the latter property to fractional and negative values of n, although the notion of a power as a repeated product becomes meaningless in such cases. Thus $a^{\frac{1}{2}}$ represents the number the logarithm of which to base a is $\frac{1}{2}$. But putting $\log a=1$ in the result $\frac{1}{2}\log a=\log\sqrt{a}$, we have $\frac{1}{2}=\log_a\sqrt{a}$. Therefore we may take $a^{\frac{1}{2}}$ to be the square root of a, and so on.

The object of the preceding remarks is to dispel the prevalent impression that indices must be taught before logarithms, but want of space has made it impossible to refer to many points which at first sight may suggest difficulties, notwithstanding that a great many such points had been thoroughly gone into by me before writing this article.

Personally I believe many teachers might do worse than give their pupils a book of tables; tell them the rules for taking logarithms from them, and then make them work out multiplication and division sums by logarithms without any introductory discussion whatever. If their pupils verified the results by actual multiplication, they would soon learn that "the proof of the pudding is in the eating." At all events, if boys are not to be taught contracted methods (as some education authorities suggest), the use of tables alone can save many of them from contracting misunderstandings in regard to approximate computations which they will find very difficult to unlearn later.

Now as to the most obvious objections to the method. It may be said that we assume that a system of logarithms exists. But equally big assumptions are constantly being made. The pupil who extracts square roots never learns *why* his answer is the root. The Theory of Indices assumes that every number has a root. Even this assumption does not suffice to put the index definition of logarithm on a satisfactory basis. The fundamental assumptions of this article are really assumed in the ordinary treatment of logarithms no less than in our method. The present method is really quite as logically sound as the old one, and historical considerations are entirely in its favour.

If it be objected that no pupil should be allowed to use slide rules or tables until he has mastered the theoretical considerations underlying them, then no student ought to be allowed to use a microscope for the purpose of studying botany until he has mastered the optical theory of the microscope.

On the other hand, the boy who starts with the practical uses of logarithms is much more likely to take a real interest in the theory of logarithms and indices than one who starts with the algebraic drudgery of the old index theory. Many years ago indices, not logarithms, used to be a "Little Go" subject at Cambridge, and I can well remember the oral work I gave my pupils. Q. What is a^0? A. 0. Q. What is $a^{\frac{1}{2}}$? A. $\frac{1}{2}a$, Q. What is a^{-1}? A. $a-1$, and so on. Moreover, I still frequently find "$a^{\frac{1}{2}}=a\times a\times a\ \ldots$ repeated $\frac{1}{2}$ times" in examination papers. It is surely unreasonable to expect boys to appreciate these gymnastic exercises with what cannot appear to them to be more than mere collections of meaningless symbols.

Again, how many pupils ever realise fully that different systems of logarithms only differ in scale, being all multiples and submultiples of one system?

There are a good many ways in which it is not difficult to give some attempt at a proof that a system of logarithms exists, or at any rate that a system can be constructed sufficiently approximate for purposes of calculation. For example, if we were to make up powers of 1·0001 by successive multiplication, taking the indices as the corresponding logarithms and giving the powers themselves to four decimal places, we should have a system sufficiently accurate for working with numbers of four significant figures. This, however, is probably a line of argument more adapted to the interest of the teacher than to the requirements of his pupils.

May I point out in conclusion that I am still constantly told by examination candidates that in order to find the characteristic of a logarithm it is necessary to take "one more" or "one less" than a certain number of figures, notwithstanding that the rule I gave many years ago, which has certainly been given by other writers as well, avoids this troublesome difference of 1. That rule consists in counting from the units place to the

highest significant figure, or *vice versa*, the characteristic being the actual number counted. Another plan would be to write down beside the given number a number between 1 and 10, consisting of the same digits, and to count how many places the decimal point would have to be shifted in order to change one number into the other.

ENGLISH PUBLIC SCHOOLS.

By E. L. MILNER-BARRY, M.A.

Partout ailleurs, le collège se propose d'instruire et cette préoccupation domine tellement ceux qui le dirigent, que le reste en est plus ou moins effacé de leur esprit. L'enseignement au contraire est, dans un public school, le souci tout-à-fait secondaire du maître comme de l'élève. —Baron de Coubertin, *Rien de changé en Angleterre.*

THE distinguished writer of the lines quoted above has delivered a eulogy on the English public schools—the great public schools [1]—which will probably send a thrill of pride through young England, but his words will hardly find an echo in the hearts of those who hold that the aggregate public-school product of the present day falls considerably short of perfection. Anyone who has been at pains to follow in recent years the current of public opinion on educational matters must have been struck by certain curious symptoms which seem to herald a coming revolution in our educational system, and many hold that the Education Act of 1902 marks a sharp dividing line between the old order and the new.

To put the Baron's contention into a nutshell, his *rien de changé en Angleterre* denotes that the stability of the very commonwealth derives from the public schools. They are the safeguards of English public life and conduct, and by their action and widespread influence bring about another curious phenomenon which their critic has observed—that ideas in England do not progress, they revolve: "Les idées ne marchent pas: elles tournent."

In his own country the Baron has observed that the pupils of the *collèges*, when they pass into public life, though possessed of considerable mental gifts, are incapable of moulding the society in which they move. As he puts it, "L'élite intellectuelle subit ainsi le joug de la foule, bien plutôt qu'elle ne s'impose à elle," and he would correct this tendency and save the State by transforming the French *lycées* into *écoles de conduite*, though he must perforce admit that his views find little sympathy in France. He has been led to this conclusion by a study of the English public-school boy, and by the *rôle* which the latter, in his opinion, plays in public life; where he wields great influence, not in virtue of any intellectual gifts, but by a mysterious touchstone of conduct which distinguishes him from less fortunate mortals: *il sait se conduire, il est gentilhomme.* So equipped, the young public-school product bursts on the world and leads it captive. Comparing him with his French compeer, the Baron writes thus of him: "Toute autre est l'action d'une jeunesse ayant acquis au collège, l'esprit de conduite et sachant vouloir plus de penser. Celle-là pétrit tout ce qu'elle approche, avec une aisance qui tient du prodige. Sans doute elle rencontre des résistances et, d'autre part, bien des contacts lui échappent. Mais, dans le milieu où elle a accès, elle établit tout de suite les règles morales et sociales dont elle-même a acquis l'habitude; cela se fait presque inconsciemment."

Let us hasten to endorse one portion of the Baron's eulogy: it may safely be said of the average English schoolboy that *il sait se conduire.* He acquires this art unconsciously by the religious atmosphere of his school, and consciously by the action of corporate life and by the operation of well-defined traditions which go back for one or two generations and have never become obscured; but he owes much, too, to the influence of the home, and to certain obvious characteristics of our middle-class life.

We admit, then, the correctness of this estimate, *il sait se conduire,* but in regard to his conclusion as to the profound influence of the public-school product on public life, we are afraid that he has overdrawn the picture, and if this is so, his contention falls to the ground. There are, it is true, certain departments of the public service where such an influence may be paramount; but for conspicuous instances of this we must look to England beyond the seas. To challenge the Baron on his own ground, we may fairly quote English municipal life, and here we believe that little if any influence is exercised by the public-school product. The composition of English municipalities, if closely analysed, would probably give the result that the public-school product is hardly represented. The public-school man is found on county councils and similar bodies, but has not so far reached in any large numbers a lower level, where his presence might exercise a certain leavening influence. But possibly this lack of enterprise may be explained by another *dictum* of the Baron's, to which we would now direct attention: "L'enseignement est, dans un public school, le souci tout-à-fait secondaire du maître comme de l'élève." The phrase is picturesque, but if it is accepted at its face value on the Continent, it may probably arouse feelings of envy in the minds of many *professeurs* and *Oberlehrer*, whose position is in the main much superior to that of many of our masters here.

In actual fact the life of a master at an English public school of any standing is a very strenuous one, and the task of imparting knowledge lies so near his heart that he is for ever attempting to impart fresh vigour to his teaching, and any fresh notions in the realm of education which have become current in this land "where ideas revolve" are largely due to him. Yet much of his work is made extremely difficult by the very conservatism of the public schools themselves. He seems to be the victim of circumstances: the circumstances

[1] Baron Coubertin in *Revue pour les Français*, October, 1908.

which do much for the able boy at a public school, but which react banefully on the average product, and send into the world many boys *qui savent se conduire* and little else besides.

The present problem is to strengthen the *savoir se conduire* by a *savoir travailler,* if we as a nation are to hold our own with other countries the secondary schools of which lack the prestige of our own, but eclipse us in the standard of knowledge acquired by the average boy. No impartial observer will deny that the English public schools turn out a certain percentage of able boys who are most carefully trained. They are in every sense of the term prize products, and are thought to have a certain commercial value almost from infancy. Their presence is purchased early, and scholarships at the universities and places in the Home and Indian Civil Service, carefully recorded, are supposed to prove the wisdom of the investment. But what of their less fortunate fellows? What is their average standard of knowledge when they come to leave school at the age of seventeen or nineteen? There is no internal means of estimating this, and so we must have recourse to outside opinions, frequently expressed, as to the extreme difficulty of obtaining young public-school boys willing to fill junior positions in businesses and to work their way to the top. "We have many openings in our office"—thus the head of a large insurance company in London—"we should like public-school boys to fill them, but we can't get hold of the right type of lad: those who will stick to routine and in time develop initiative and rise to the top of the tree. We can't get them. They are above working overtime. We now try to get hold of lads from small country grammar schools. They know how to work and get on." Recently an able boy wishing to better himself called on the principal of a London college, and consulted him as to certain classes he wished to take, and was told to attend one on Saturday afternoon. He did not return. No thought of professional advancement would induce him to leave his football club in the lurch: *il savait se conduire.*

Other foreign critics besides the Baron have watched the growth of the English boy and eulogised our public schools, but they have made other discoveries. They have found that the English boy possesses a natural aptitude to learn not inferior to that of his foreign competitors, but that this aptitude has not been developed, and for this they blame the English school system. If the boy is candid, he will admit that during much of his school career no even balance was held between the claims of brain and the claims of muscle, and that indolence in the matter of work might be condoned, but that any slackness in athletics was utterly unpardonable. For this probably the public schools are not entirely to blame: the instinct for sport is national, and was in existence long before the public school loomed so largely in the public eye as it does to-day. Sport is the property of the community rather than the hobby of the individual, and thus in large communities it has always flourished, and has during the last decade, despite some quiet remonstance, become a national burden, and reacted adversely on national efficiency and national sentiment. One distinguished headmaster has already publicly commented on the danger of the increasing attention which school athletics receive at the hands of a section of the Press, ever ready to cater for the sporting instinct of the many. This is a very significant admission, and if the general public can be convinced that the claims of sport in a public school are often at least as exacting as the claims of work, some progress towards reform may be made.

Recently the German Emperor directed the attention of the German education authorities to the value of sport, and certain very needful experiments were tried in the German schools; but there is already a growing feeling among thoughtful Germans that any widespread movement towards the development of sport might prove a worse evil than that which it was inaugurated to remedy, and that carefully regulated time-tables are at least as useful in correcting over-pressure as the setting up of another ideal, quite as exacting as the legitimate one of work.

I hold, then, that the average public-school boy suffers in two ways: intellectually because in an age of specialism his obvious needs are neglected for the sake of the brilliant few who swell the list of results, and morally because the undue prominence given to athletics in the atmosphere of school, and often of home, narrows his outlook and gives a bias to his judgment.

What, then, is to be the solution for the average boy? So long as the present scholarship system continues, so long will he fall short of his due meed of attention. Should, by the action of untoward circumstances, the number of scholarships obtained in a given year fall short of the requisite number required for business purposes in a school, there is a hue and cry, particularly in those places which, as the Baron so ably puts it, "subissent le prestige des publics schools et s'efforcent de les singer ou de se mettre au moins au diapason," and the financial genius of the concern, keenly sensitive to the possibility of any drop in numbers, rushes in with the hackneyed suggestion that this or that department must be strengthened. Some brilliant scholar is added to the staff to recover the lost ground, and the average boy goes on his way, still instructed by the average untrained teacher. *Les idées tournent,* but the remedy will come. There is already a subtle revolution in progress, and the Baron may well be pardoned for not having observed it. The Act of 1902 may mean several things—more sympathy between the various classes of society, and by reflex action a more enlightened elementary education.

One thing, however, is clear. Public money, coupled with popular control and departmental inspection, should work a great reformation in the education of the average boy. It is not conceivable in schools which are under the guidance of the Board of Education—and there are already

some eight hundred of these—that any system will be tolerated which starves the many for the benefit of the few, and the British taxpayer may by pressure on his pocket be aroused from his lethargic attitude to take a keen interest in educational matters. Through the schools which he supports lies the avenue to greater educational efficiency, a higher standard of knowledge on the part of the average boy. It is not necessary to enumerate here schools of this type, which, in the character of the education given and in the average product, may be mentioned beside those which the Baron has in his mind. Both types of schools will develop side by side, each learning something from the other: the newer school possibly something of the art of *savoir se conduire*, the older foundation something from the new ideals and methods which an army of trained teachers will introduce into the younger. The operation of such a movement must necessarily be slow, and political and economic considerations will probably determine its rate of progress. When the Baron next visits us he will possibly find *rien de changé* in our outward appearance, but if he probes beneath the surface he may discover that the English public-school boy is just as much of a sportsman as ever and a keen marksman, and that side by side with this sporting qualification, which we would in no sense belittle, his standard of knowledge has risen, and that his influence on his fellows is no whit lessened because he is helping the nation to realise that knowledge is power, and that educational efficiency is the straightest road to national supremacy.

THE EDUCATIONAL METHOD OF DISPUTATIONS.

By Prof. FOSTER WATSON, M.A.

THOUGH a student in the mediæval universities had to study the seven Liberal Arts, the aim thereof was not merely the knowledge of so much Grammar, Rhetoric, Dialectic, together with the knowledge of so much Arithmetic, Music, Geometry and Astronomy. Nor was the object simply the discipline of the mind. All subjects were made subservient to Dialectic, which was the essential instrument of utilising all the material of knowledge. The Quadrivium similarly provided subjects for discussion. All these subjects were therefore the practising-ground for the development of Dialectic. Preliminary exercise of Dialectic on the subject-matter of the remaining six Liberal Arts perfected the use of Dialectic in the settlement of problems in the higher reaches of Metaphysics and Theology, of Law, of Medicine. Logic was the organon whereby all knowledge was converted into a practical form for use. It determined the approach to all truth, the solution of all problems, and its disciplinary power was an incident in the essential quality of its safe guidance to the settlement of difficult practical problems in life. Accordingly, from the time of beginning to attend lectures on logic, the student was expected to familiarise himself with listening to disputations as a preparatory stage to being able himself to take part in disputations.

In all the university stages as "general sophister," "questionist," "determiner," "inceptor," the essential method of training, even in the sixteenth century, was the disputation. The examination, if we so call it, was an examination, not of knowledge, but of the effectiveness of the training. If we once realise that the Middle Ages were without the printed book, and that only rarely did the student himself possess MSS., excepting such as he derived from the dictation of his teachers' texts and notes, the marvel grows upon us that so much could be accomplished. The ingenuity of the educational methods employed under the disadvantage of general absence of texts, books of reference, criticism, information and suggestion necessarily imposed the oral method. The criticisms of Rousseau and many modern writers against book-knowledge do not apply against the methods of the Middle Ages. As Mr. Latham says: "Students were accustomed to learn by their ears as we are by our eyes; sermons and disputations stood them in place of current literature, and the power of attending to what is delivered orally was much more commonly possessed than it is now."[1]

Such a method was conveniently, if not necessarily, based on authority. Our modern practice differs from mediæval practice, in leaving first principles as "open" questions, theoretically, but assuming them in the exposition of a subject. The open-mind on first principles is a vital distinction from the old attitude. Still, deviation from, say, the theory of Free Trade in Economics, or the theory of Evolution in Biology, is even now held to be a lapse into scientific heresy. The modern leaning is not, indeed, towards acquiescence in the authority of any individual. An attack on Newton's Laws of Motion would not readily find scientific listeners, not because the man of science holds Newton to be infallible, but because he is convinced of the stability of the reasoning processes whereby Newton established his Laws. There were, however, rationalists in the Middle Ages like Abelard, who was equally convinced of the foundation of Aristotle's views.[2] The mediæval problem, therefore, was not so much an investigation into the credentials of what was, in the opinion of the wisest men, true, but rather the propagation of skill and ability in practically applying to the purposes of life what was already known or thought to be

[1] Latham, "Action of Examinations," p. 103.

[2] The Renascence writers established the rationalistic attitude. Erasmus, Vivès, Ramus, all appealed against the authoritative determination of speculative questions. Mulcaster, writing in 1581, states the position in words showing complete severance from the mediæval tradition. "It is not so [he is speaking of authority] because a writer said so, but because the truth is so, and he said the truth. The truth gives him title, and that is it, which must pass, strong enough of itself, and ofttimes weakened, in the hearers opinion, though not in itself, by naming the writer."

known. Logic in the mediæval university was not an instrument of scientific research, but a method of educational training to acquire skill in the process necessary for ecclesiastic, juristic and mediæval practice. Hence—

"The disputant brought with him into the schools his Bible, his Decretals, or other ecclesiastical authorities bearing on his point, or else his Aristotle, or his Corpus Juris, according to his subject. Besides this he had a little store of *dicta* of the schoolmen which were held absolute on points of logic; and when he had brought any position under a head on which his authority spoke clearly, then it was *valet quaestio* or *cadit quaestio et argumentum*, as the case might be."[1]

The Disputation remained as an officially recognised university method long after the Middle Ages. Thus in the Elizabethan statutes it is strictly enjoined. The old Aristotelian subjects, however, fall out from the "acts." Latin became less spoken, and it was evidently futile to require students to agree as to the discredited Aristotelianism, and in Latin, over which they had comparatively small command. Accordingly, in the later sixteenth and earlier part of the seventeenth century, subjects became rather theological in character, and, in the latter part of the seventeenth century, subjects in physical science were taken up from Bacon and Descartes, and in the eighteenth century the Newtonian Physics furnished the subjects of theses. Although the disputations later became a dead letter, it was only in 1837 that the University of Cambridge abolished the Disputations in the Faculty of Arts, and in 1858 they were legally abolished in the Faculties of Divinity, Law and Physic. The survival is seen in the Doctor's thesis on which a *viva-voce* examination may be held.[2]

The object of the mediæval university was not only to provide teaching but also to train teachers. The Master of Arts was so called because he would have to teach others. His chief work was as teacher to help his pupils to dispute "syllogistically." The possession of the degree of Master or of Doctor gave the right to teach. "These titles," says Mr. Latham (p. 96), "were not meant for mere marks of having received a general liberal education; no one probably sought for them who did not mean to teach." Essentially, then, the work done in the mediæval university for all students who proceeded to the degree of Master or Doctor was that of a university training college for teachers, and the degree of Master or Doctor was substantially a licence for teaching in any place. University methods of instruction necessarily had a particularly close connection with school methods. It is not, therefore, surprising to find that the Disputation was a general school method. For the university teachers not only taught in the schools of the university, but also eventually took up teaching work in country schools, away from university centres.

[1] Latham, p. 110. [2] Latham, p. 121.

Probably the best treatment of disputations by a writer on school education is by Vivès, who gives an account of the evolution of the Disputation. Describing school teaching, Vivès says: "Some wish to wrangle a long time on the same question, and think it disgraceful to yield to one who gives a better answer, or to omit to criticise adversely, as if it were the *rôle* of only a torpid and crude mind not to find something to cavil at. Immediately they cry out something *ad rem*, nay, rather *in rem* and *praeter rem*. And so the incitements to, and fomentations of, prolix wrangling are brought from the other arts into grammar. This was not only easy to be done by philosophers and theologians who took possession of the schools so as to divert something of their own controversies into these first rudiments (*i.e.*, grammar), but it was necessary for those who did not know that all these other matters were outside the province of wrangling. From Dialectic they took the methods of definitions and divisions, argumentations, major, minor, conclusion, consequences. Whence came the disputed points in Donatus, and the remarkable gloss (with arguments and manuals) and other equipment more pleasant to name than to read."

"And again," he says, "Disputations to no slight degree take away from the insight of the judgment. Formerly the object of the Disputation was the attempt to fix more deeply what had been taught by the teachers. Amongst men, or those of more advanced age, formerly there was a comparison of opinions and reasons, not the intent absorption on victory, but the elucidation of truth. The name itself bears witness. Disputations were so called because through them truth was either pruned or purged of falsity. Afterwards, praise and reward were awarded by an audience to the man who seemed to have argued out the question the best, and from praise often came riches and wealth. Then the depraved desire of honour or money penetrated the mind of disputants, and, just as in a prize-fight, victory alone was looked for, not the elucidation of truth."

Vivès then describes the Disputation in the School. It was, he says, the custom to practise the boy constantly in disputation, "beginning his career of altercation from his birth and making no end of it for him until his death." The boy brought to school forthwith was ordered to dispute on the first day and was immediately taught to wrangle, though as yet he was unable to talk. The same in Grammar, the Poets, Histories, in Dialectic, in Rhetoric, in absolutely every subject. Someone will wonder how the most apparent, simple, rudimentary matters can be susceptible of argument? But nothing is so certain and clear that some little questions cannot be raised about it, and, even as by a wind, stirred into action. "These beginners are accustomed never to be silent, to asseverate confidently whatever is in their mouth, lest at any time they should seem to have ceased speaking.

Nor does one disputation a day suffice, or two, as with eating. At breakfast they wrangle, after breakfast they wrangle, at supper they wrangle, after supper they wrangle. In the house they wrangle; out of doors they wrangle. At meals, at the bath, in the sweating-room, in the temple, in the city, in the country, in public, in private, in every place, at every time, they are wrangling."

Vivès published his "De Causis Corruptarum Artium" (from which the above passages are translated) in 1523. It is not easy in considering mediæval times to differentiate between the instruction in the university and the school. Disputations, however, took place in both. Even the Masters of Grammar, the lowest grade of teachers, were required by statute in the University of Oxford to dispute in Grammar on Thursdays. As to the English mediæval schools, there is extant an account of the twelfth-century disputations in London schools. Stow in his "Survey of London" includes a translation of the "Descriptio nobilissimae civitatis Londoniae," written by William Fitzstephen (before 1190). In this "Descriptio" Fitzstephen speaks of the Disputations in London schools.

"In London three famous schooles are kept at three principall churches, which they retaine by priviledge and ancient dignity. . . . Upon the Holydayes, assemblies flocke together about the church, where the Master hath his abode. There the schollers dispute; some use demonstrations, others topicall and probable arguments: Some practise Enthimemes, others are better at perfect Syllogismes: Some for a shew dispute, and for exercising themselves, and strive like adversaries: Others for truth, which is the grace of perfection."

These public disputations of boys' schools lasted up to the sixteenth century. In the Statutes drawn up in 1518 of Dean Colet's school of St. Paul's we read: "I will they use noo kokfighting nor ryding aboute of victory nor disputing, at sent Bartilmewes, whiche is but folish babeling and losse of tyme." This statute of St. Paul's School marks the incoming of the new spirit of the Renascence. Colet was alive to the views so forcibly expressed by Erasmus and Vivès on the evils of the disputation. He saw that the practice of disputing did not lead to the discovery of knowledge, that it was mediæval and obscurantist in tendency, and accordingly he forbids it in his school. On the other hand, the leaders in the Renascence movement were not able to prevent the practice of the school disputation, nor even to hinder its introduction in new schools. In 1552 Christ's Hospital was founded, into which school 340 children were admitted as against the 153 of St. Paul's School. In 1555 Holinshed says: "On Bartholomew even, after the Lord Maior and Aldermen of London had rid about Bartholomew Faire, they came to Cristes Hospitall, within Newgate, where they heard a disputation betweene the scholers of Paules Schoole, Saint Anthonies Schoole, and the scholars of the said hospitall." The victor was a boy of St. Anthony's School, who was awarded a prize of a silver pen with 5*s.*, whilst his master received a present of 6*s.* 8*d.* Dr. J. H. Lupton[1] states that St. Paul's Cathedral School (which is to be distinguished from Dean Colet's St. Paul's School) was required by statute to hold disputations in philosophy and logic at St. Bartholomew's on the day of that saint.

Throughout the Tudor and Stuart times, the Disputation held its sway in the grammar schools. We have authority for this statement in the important accounts of school practice to be found in Brinsley's "Ludus Literarius" (1612) and Charles Hoole's "New Discovery of the Old Art of Teaching School" (1660). The Disputation then was confined for the most part to questions of grammar. One well-known English-published text-book was John Stockwood's "Disputatiuncularum Grammaticalium libellus," in Latin, published in 1607.

The method of the Disputation, therefore, was used in the universities, and in the grammar schools. But it penetrated, in a modified form, still further. The method of Apposition was an outcome of the Disputation, and was to be found in the elementary or petty schools as well as in grammar schools. In the subject of spelling of English words, Edmund Coote supplies us with an example.

"The object[2] is to bring scholars to answer "without book."

JOHN. Who will adventure his credit with me in apposing for the victory?

ROBERT. I will never refuse you nor any in our form in anything we have learned, begin what you will.

John then asks Robert the words, one after the other, lo, of, from, each of which is correctly spelt.

JOHN. How write you "people"?

ROBERT. I cannot write.

JOHN. I mean not so, but when I say "write" I mean spell, for in my meaning they are both one.

ROBERT. Then I answer you, p, e, o, p, l, e.

John asks what use are the letters "o" and "e" in "people," questions which Robert answers.

John then asks the spelling of the word "Jesus." It is spelt Je, and not Ge. Why? "Because it is not in the table at the end of my book, for all that be written Ge be there, and our master taught us that all other of that sound be written with J, e."

JOHN. How write you "circle"?

ROBERT. S, i, r, c, l, e.

JOHN. Nay, now you miss. Therefore now you must appose me.

One of Robert's questions is: What is the best way to spell a long word, as "admonition"?

JOHN. I must mark how many syllables it hath, which I find to be five. Then I take the first, a, d, *ad.* Then the next, m, o, *mo*; then put them together, *admo.* So spell and put to the third, *admoni*, and so until you come to the end.

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[1] "Life of Colet," p. 159, quoting from "Registrum Statutorum" (p. 75) of St. Paul's Cathedral School.

[2] "English Schoolmaster" (1596), p. 18.

Robert finally asks: How many ways can you express this sound, *si*?

JOHN. Only three, sie and sci, or xi, which is "ci."

ROBERT. Now you have erred, for ti before a vowel doth commonly sound *si*. I will challenge you again to-morrow.

JOHN. Do your worst. I will provide likewise for you, and never give you over until I have gotten the victory, for I take not so much pleasure in anything else all day.

The method of the Disputation thus provides us with a striking instance of the movement of educational method from "the top downwards." It has often been pointed out that the Disputation was the prevalent university method, but its domination throughout the educational system of the Tudor period can be still further emphasised by recognising its permeation in the work of grammar schools—and the elementary schools.

The Disputation was sometimes established in the grammar schools by definite statute. For example, the statutes of Bury St. Edmunds' Grammar School,[1] about 1550, require:

"Half an hour before dinner or supper let them dispute on the inflexions and cases of nouns, the conjugations, tenses and moods of verbs, or dictate in turns proverbs, adages, sentences, verses, silently and without noise. These speeches are to end at the first stroke of the clock, and the boy who has beaten his fellows shall have the first place by way of prize. He shall hold it until he has been overcome by another's industry."

"Item, every scholar shall, upon every Thursday in the afternoon, bring one farthing, for which he shall dispute with his fellow in grammatical questions. And if it fortune so that neither party win of his fellow, then both farthings shall go to the common box, and thence be given to the scholars according to their deserts for their exercises, or otherwise at the master's discretion."[2]

COLOUR PHOTOGRAPHY.

By G. H. WYATT, B.Sc., A.R.C.Sc.
Emanuel School, Wandsworth Common.

TWO general methods for obtaining photographs in natural colours have been developed. In one the colours are produced by interference or dispersion; in the other, certain colours are artificially combined, and the choice of colours determines the closeness of the agreement between the finished photograph and the coloured object. The latter method more readily leads to reproduction, and the photograph requires less apparatus for viewing; but scientifically, it may be, the former method is more interesting, and seems to lead to a more perfect result.

LIPPMANN'S INTERFERENCE PROCESS depends upon the production of stationary light waves. When a series of waves of a constant length fall perpendicularly on a reflecting surface, interference between the direct and reflected waves takes place. In the new system thus produced nodes occur at the surface and at distances $\lambda/2$, λ, $3\lambda/2$, &c., from the surface. The very small distances here concerned made it very difficult to produce evidence of the existence of this stationary system of waves. Wiener was the first to succeed, and he used for the purpose a silvered glass plate with a sensitive film turned to the direct waves. The silver surface reflected the waves, and a system of stationary waves was produced in the gelatine film. If we suppose that chemical action produced by the light waves is proportional in some way to the agitation in the waves, then it follows that at the nodes the action is a minimum and at the anti-nodes a maximum. On developing a plate subjected to the action of a stationary system, and fixing by removing the unaltered silver salt, it is found that silver is deposited in layers parallel to the glass surface and at a distance apart equal to half the wave-length of the light used. The deposition of silver indicates the occurrence of chemical change, and the parallel layers mark the positions of the anti-nodes, the centre of each layer lying exactly half-way between the nodes of the stationary system. So far, the layers inside the outermost would not be visible separately, each being covered by the one in front of it. If a section of the gelatine film could be made, either perpendicularly or inclined to the surface, and the section examined by a microscope, the separate layers (which, of course, in each case fade away gradually on each side of its middle section) should then be seen. This has been done by two experimenters: Neuhaus, using a magnification of 4,000, could distinguish seven or eight layers, and Senior, using a power of 1,500, has accomplished the same difficult feat.

It is important to notice that if the reflecting surface be not covered with a uniform thickness of sensitised gelatine, then, on fixing, some parts of the plate will have a larger number of silver layers superposed upon them. Such is the result in practice, and the plate presents an irregular appearance when viewed obliquely, being crossed by linear fringes such as those seen in ordinary interference experiments.

To understand the production of these fringes, suppose the light originally falling on the sensitised plate to have the wave-length λ, then the silver layers are spaced at a distance $\lambda/2$ apart. If light of the same wave-length falls perpendicularly on the finished plate, it undergoes partial reflection at each layer of silver, and the rays reflected from two consecutive layers have, on emergence, travelled paths which differ by twice the distance between these layers—that is, λ. These rays reinforce one another, and there is brilliant reflection. If light of any other wave-length fall on the plate, there is no such reinforcement, but more or less complete interference. Suppose a plate to be exposed originally to red light, then, when viewed normally by white light, all the constituents of this compound light will be more or less completely absorbed, and only the red portion reflected. Viewed obliquely, the reflected rays will have travelled a somewhat

[1] Vict. County Hist., Essex, vol. ii., p. 314.
[2] *Ibid.*, ii., p. 505.

longer distance in the gelatine between the layers of silver, and, consequently, the red rays will no longer interfere, and the plate returns some other colour.

Lippmann used clean mercury for the reflecting surface, and placed the sensitive plate with its transparent film in contact with the mercury, a special "dark slide" being necessary. A spectrum was then caused to fall on the glass of the sensitive plate, and, on developing and fixing, a coloured photograph of the spectrum was obtained. To explain the production of this spectrum as seen on viewing the finished plate, it is only necessary to remember that at each point of the sensitive plate an arrangement of silver layers is produced which corresponds in spacing with the wave-length of the light falling on the plate at that point. In this case again the appearance of the finished plate changes with the angle at which it is viewed. If the original light falls perpendicularly on the plate, then, to obtain a reproduction correct in colour, the plate must be viewed also normally. If the image of a coloured object be focussed on the sensitive plate backed by the mercury mirror, the finished plate viewed at the proper angle will show a coloured photograph of the object. If the angle of view be made more oblique, the colours change each in the direction towards the red end of the scale of spectral colours. To improve the resulting "image" by getting rid of surface reflection at the first gelatine surface, Wiener immerses the plate in benzol. Liesegang develops the plate with hydroquinone, and uses gelatino-chloride of silver in the film. Lippmann, when using a bichromated sensitive film, fixes with an aqueous solution of potassium iodide, and washes the plate in a 20 per cent. solution of silver nitrate. The colours are then extremely brilliant, both when viewed by reflected and by transmitted light, in the latter case, of course, the colours being complementary. Lehmann, by breathing on the gelatine film, causes it to swell, and, the distance between the silver layers being thereby increased, he is enabled to photograph the infra-red rays. The plate is then protected by a glass wedge cemented to it. Rothé dispenses with the mercury, and uses a gelatine-air reflecting surface. The exposures required are long and the results are not so brilliant.

Lippmann's Dispersion Method.—The apparatus used in this method consists of a slit, a small angle prism, with edge parallel to slit, a lens, and a plate. If white light fall on the slit, a negative crossed with dark lines is produced. If the latter be illuminated and viewed at the slit, the apparatus being otherwise undisturbed, the light passing through the negative will combine and reproduce the effect of the original white light.

Substitute a series of fine slits for the single one, the new arrangement consisting of fine, transparent lines, five to the millimetre, and a series of very narrow spectra will be produced on the plate. The angle of the prism being very small, the width of the separate spectra will be less than the distance between them. There is thus produced a surface ruled in colours.

The coloured object is now photographed through the compound slit, and a negative produced, which, if viewed at the distance of distinct vision from the slit, gives a complementary image to an eye placed there.

Substituting a positive for the negative, and viewing in the same manner, a correctly coloured photograph is seen. The drawback to this method is that the same apparatus is requisite both for taking and viewing the photograph.

Three-colour Processes.

These all depend upon the principles underlying the Young-Helmholtz theory of colour vision. Experiments have repeatedly shown that the eye estimates the colour of light received by the varying degree to which three sensations are excited. These sensations are those of red, green, and violet (or, according to Maxwell and Fick, blue), and arise from the decomposition of three different chemical substances in the retina. The matter is rendered more difficult to follow in that, even in the case of homogeneous light, two at least of these sensations are more or less aroused, and in some cases all three. That is, the actual ratios of sensibility of these three photo-chemical substances towards the colours of the spectrum when plotted exhibit curves which overlap one another, rising to maxima in the red, green, and blue.

When sunlight falls on the retina, each of the three sensations is excited, and the relative excitations as produced in this case are always understood to cause the total sensation to which the name of "white" is given. In the case of colour-blindness, one or other of the photo-chemical substances has become in some way changed, so that two out of the three are exactly equivalent. With those unable to distinguish the red cherry from the green leaf, except by form, the red sensation has become exactly similar to the green sensation, and, therefore, the persons are red-blind.

If a coloured picture transmits or reflects to the eye rays which correspond exactly or even closely to those which are capable of producing the maximum excitation of the three primary colour sensations, the colours of the picture will correspond exactly or closely with those of the natural subject. It is many years since the first suggestion of coloured photography based on the three-colour principle was published, and many suggestions have been forthcoming towards improving the process. We shall only consider the better-known methods in the following brief account.

Three screens or light filters are prepared corresponding to the three colour sensations—that is, one transmits red, another green, and the third violet or blue.

The object is next photographed through each screen in turn, and three negatives produced. In these the density or blackness of the silver deposit

is proportional to the amount of light emitted by the object of the same nature as that transmitted by the particular filter used.

From each negative is prepared a transparent positive, in which the transparency of any particular portion is proportional also to the quantity of the particular blue, green, or red light emitted by the object.

The positives are now viewed either after staining or while illuminated with coloured lights, each corresponding to the tint of the filter to which the positive owes its origin. To produce the effect of the coloured original it is necessary that the effects of the positives should be added, and it is in this latter particular that the different methods of colour photography vary so far as they are of interest to the general student.

In IVE'S process the light coming from the three coloured positives is combined by reflection in a stereoscopic arrangement, and the eye receives the impression of the coloured solid object.

In JOLY'S process the filter screens are replaced by one coloured "grating" ruled with orange-red, yellow-green, and blue transparent bands 0·004 in. wide approximately. A negative is made behind this screen, and a positive transparency next produced. The positive is backed with a second ruled screen, which resembles the first, except that the colours are the fundamentals red, green, and violet. The latter colours are such that when projected upon a screen they together make white light. Under these conditions the positive appears by transmitted light in the correct colours of the original.

The WARNER-POWRIE process is on the Joly principle, the lines being much closer and produced by exposure and solution of bichromated gelatine under three different line stencils. By this process copies of a coloured positive may be made, one exposure to the object being sufficient.

The SANGER-SHEPHERD method is to use three screens or filters and to make three negatives which must be exactly of the same size in order that they may register perfectly when superposed.

The "red" negative—taken through the red screen—is used to make a black lantern slide, which is afterwards converted to a transparent greenish blue. This glass slide is used as a support for the other two positives, which are made upon strips of film and afterwards coloured. These two positives are made in gelatine on a celluloid base and are in the form of low reliefs. The relief from the green filter is stained pink, and that from the blue filter, yellow, complementary colours to those transmitted by the filters. The three positives are next very carefully superposed with exact registration and the whole bound as an ordinary lantern slide. The stains and filters used are spectroscopically examined and chosen, and the success finally achieved depends chiefly on this preparatory work.

LUMIÈRE AUTOCHROME.—In this process starch grains of approximately constant size are divided into three portions, which are dyed respectively orange-red, green, and violet. The three portions are then thoroughly mixed and spread evenly (some eight or nine million grains to the sq. cm.) over a glass plate, coated with a substance which causes them to adhere firmly. The plate is varnished and sensitised. Under a microscope just out of focus the light transmitted through one of these plates is white, due to the blending of the three colours. On exposure and development, silver is deposited which apparently more or less covers these coloured particles, so that by transmission the negative shows a complementary coloured picture of the object photographed. Dissolving the silver causes inversion, the negative becoming a coloured positive. Many pictures produced by this process have been exhibited and they appear wonderfully like the original objects in most tints. The grain structure is only noticed on very close inspection. This would appear to be one of the simplest of the three-colour methods.

WOOD'S DIFFRACTION METHOD.—If the eye be placed in either of the spectra produced by a grating on which parallel light rays fall, the grating will appear filled with light of the colour corresponding to the portion of the particular spectrum selected. If the grating is ruled differently in one part of its surface, that part will show a different colour. For this method of three-colour photography, three gratings are ruled with such spacing that the dispersions of the red, green, and blue produced by the three rulings are equal.

Three positives on albumen-coated lantern-slides are taken from the three negatives, and are each covered with bichromated gelatine. Each positive is covered with the corresponding grating, exposed to strong light and washed in warm water. The result is that each negative is now faced with a replica of the grating used, and shows colour brilliantly. From each positive a gelatine print on this glass is made, and the three prints, which show the grating ruling strongly or feebly according to the density of the different portions of the positives, are superposed and viewed through a lens by means of light coming from a narrow source and falling in parallel rays on the finished photograph. It was afterwards found that one plate only need be exposed under the three positives in turn with careful registering.

The final photograph exhibits the correct colours of the original object, because where the red occurs in the original, the spacing of the first grating is present; where yellow occurs, both the first and second rulings are present; where the blue occurs, the third ruling is present; and where white occurs, the lines of all three gratings are present. The surface of the plate thus constitutes a compound grating of great complexity.

Students wishing to use either of the processes here briefly described will find many practical hints in the almanacs of the *British Journal of Photography* for the current and past two or three years.

TECHNICAL AND TRADE SCHOOLS.

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The history of education is the battle-ground and burial-ground of impracticable theories, and one who studies it is soon taught to abate his constructive self-confidence and to endeavour humbly to learn the lessons and harmonise the results of experience.—*H. Sidgwick.*

Le progrès est en raison directe de l'action de l'homme sur les choses et en raison inverse de l'action coercitive de l'homme sur l'homme.—*Yves Guyot.*

DURING the last decade it has become increasingly evident that the education given in elementary and secondary schools has been of a type suited to, as it has developed from the need for, the preparation of a large number of children for clerical occupations, and that far too little attention has been paid to the requirements of the rank and file who necessarily enter various trades and industries. The educational ladder stood ready for the bright child who wished to be prepared for the office, the Civil Service, the teaching or other professions. The captains of industry—perhaps even the sergeants —were catered for; but the rank and file, some 90–95 per cent. of the children beginning life in a primary school, were ignored. Various opportunities of training are, and have been for many years, open to all, and are grasped by few. Our "capacity catching" schemes collect the more intellectual children, leaving a class who have very varying but ill-defined needs, who bring no *kudos* to the school, but are potentially the parents of most of the succeeding generation. Further, the lack of organic connection between the primary school and the technical institute on one hand, or between the technical institute and the employer on the other, is deplorable.

In spite of the excellent work still being carried on by the National Institution of Apprenticeship and allied bodies, the old system of apprenticeship is dead; or, at any rate, practically moribund. The evidence of and reasons for its failure may be found summed up in a masterly manner in a chapter entitled "The Entrance to a Trade" in "Industrial Democracy," by Beatrice and Sidney Webb.

From the point of view of the community, the old system has three capital disadvantages. There is no security to the public that the apprentice will be thoroughly and efficiently taught. . . . In these days of pedagogic science, elaborately trained teachers, and "Her Majesty's Inspectors of Schools," the haphazard relation between the apprentice and his instructors will certainly not commend itself to the deliberate judgment of the community. Moreover, all history indicates that an apprenticeship system must leave outside its scope the large proportion of boys who recruit the vast army of unskilled labourers. . . . Undemocratic in its scope, unscientific in its educational methods, and fundamentally unsound in its financial aspects, the apprenticeship system, in spite of all the practical arguments in its favour, is not likely to be deliberately revived by a modern democracy.

Further criticism and information on the subject is to be found in the Apprenticeship Report of the L.C.C., and in a pamphlet by Mr. Edric Bayley on industrial training in elementary schools, while the question of co-operation between teachers, employees, and employers is touched on in Circular 604 of the Board of Education.

The absolutely necessary accomplishments—using the word in its logical sense—for a civilised life are but few in number and receive sufficient attention already. They are taught with success, so far as success may be tested in school; but there remains, however, the fundamental difficulty—that of teaching the pupil to apply his knowledge, to exercise his powers under the conditions of workaday life; and it is certain that these faculties cannot be developed adequately under the conditions of ordinary school life. What subjects and what methods best develop those necessary accomplishments are debatable, and it is unnecessary to consider them here; but it is necessary to point out that there is, unfortunately, a widely spread idea that a sound education introductory to a skilled trade is not sufficiently educational because it is essentially practical. But the growth of the tendency to introduce more and more practical work into elementary schools results from a sound characteristic of English educational thought—"to approve those forms of school training which stimulate the application of the pupil by a constant sense of the practical utility of his or her intellectual efforts."

At the present day there are several distinct types of schools which aim at removing the disadvantages under which the rank and file have hitherto laboured; thus we have the higher elementary school, which has grown out of the older higher grade school, and the trade school proper. The first satisfies no real educational need. It is in connection with the older higher grade school that modification and expansion seem to be urgently required, especially in the direction of their being brought into closer touch with the future practical needs of the pupils. Why should we not have certain schools making a special feature of carpentry and the building trades, others of engineering and metal-working trades generally?

These suggested institutions must not be confused with the trade schools proper, their aim being to foster and encourage appropriate interests, not to impart a specialised knowledge. The usual secondary-school subjects could be taught, but care should be taken to stimulate interest in those subjects by devoting special attention to those portions likely to be of use to the embryo carpenter, builder, or engineer. For example, in a school making a special feature of carpentry, many geography lessons might be on timber, the various kinds of timber, the influence of climate, routes and methods of transportation, the opening up of new sources of supply. Again,

the application of mathematics is sufficiently obvious, while the history teaching might concern itself with the social development of the last century from the point of view of the mechanic (*e.g.*, trade union structure and function) and industrial history generally. In short, the whole series of school lessons would be linked with something of vital interest for the pupil. Educational ideals would not be sacrificed, and yet utilitarian purposes would be served. Pupils should be transferred to such schools from the primary schools at the age when scholarship-holders enter the secondary school, *i.e.*, at eleven or twelve.

Lastly, we have the trade schools proper, of which there are three distinct kinds: (*a*) the girls' trade school, (*b*) the technical trade school for boys, and (*c*) the preparatory trade school for boys. These schools replace part of the old system of apprenticeship, combining so far as possible the two essential factors, *workshop training under workshop conditions* and technical institute work. They are for children who, for economic reasons, usually leave the public elementary schools at thirteen or fourteen years of age and, ideally, attend evening continuation classes on three or four evenings a week. But apart from the fact that it is only the exceptional child who is capable of profiting by instruction after the practically unlimited hours of child labour, the leakage is enormous; not more than 25 to 30 per cent. of the children leaving a public elementary school at thirteen or fourteen receive any further systematic care, and it is just those who fail to receive such care who need it most. The critical years of adolescence immediately follow the day-school course, during which some kind of virtually unskilled labour, involving long hours of dull routine work free from mental or moral discipline, is only too easily obtained, and in a few years there is yet another recruit to the already overwhelming army of the unemployed.[1]

The necessity for the establishment of many more trade schools, together with the raising of the age limit for school attendance, associated as it is with the economic problems of child labour, has long been recognised abroad. It is at last making itself felt in England, for a few schools of this type have been recently opened and the expediency of applying the principle of compulsory attendance has even been mentioned. The Education (Scotland) Bill, to make education compulsory in Scotland up to the age of seventeen through continuation schools, is a step in the right direction.

As London development is most significant, and it is in London that the problems are most insistent, I shall confine my attention chiefly to London trade schools.

GIRLS' TRADE SCHOOLS.—The only skilled trades employing any number of girls are the tailoring, the dressmaking, the upholstering, and allied trades. For them we have already established:

The Day Trade School, Borough Polytechnic.

The Day Trade School of Dressmaking, Paddington Technical Institute.

The Day Trade School of Dressmaking, Woolwich Polytechnic.

The Day Trade School, Shoreditch Technical Institute.

The Craft School, Globe Road, Bethnal Green.

In all these schools the aim is to give the pupils a sound preliminary training in a skilled trade and at the same time to continue their education by the study of general subjects, in the teaching of which, however, the requirements of particular industries are always kept in view. Every effort is made to enlist the sympathy of local employers, and there is in each case an advisory committee of trade experts to supervise the work of the school, advise the governors, criticise the work done, and where necessary make suggestions for the extension or improvement of the curriculum.

Admission to these schools is by scholarship or by the payment of a small fee; the age of entry is about fourteen, and the course extends, as a rule, over two years. Further, although these schools are specifically trade schools, it is not by any means forgotten that the training of a girl should fit her for the home as well as for an industry. Domestic economy usually figures on the time-tables, and the schools, by encouraging habits of regularity, obedience, attention, accuracy, self-control, and observation, form a valuable preparation for home management.

The type of instruction given in the girls' trade schools is very highly specialised and frankly utilitarian to a degree which would perhaps be dangerous in the case of boys. The basis of most women's skilled trades is needlework, the principles of which are more or less thoroughly learnt at school and home, and, so long as the danger of turning out more workers at a particular trade than are required by the state of the market is avoided, over-specialisation would be difficult, if not impossible. But the basis of boys' trades, manual dexterity and skill, ought to be of very different standing, and it is, perhaps, for this reason that many of the trade schools for boys already established supplement rather than replace a period of apprenticeship owing to the great difficulty of co-ordinating the work of the schools with the work of the factory and shop. The schools already established, with but few exceptions, seem to be more suited to the class of boys from whom will be drawn the future foremen of our industries; they do not solve the problem of training our rank and file. The system of education hitherto adopted has left our lads slow and clumsy in learning new methods, unadaptable, in fact "pretty nearly as it found them and with this single difference, that it gives a fixed direction to their stupidity, a sort of incurable wry neck to the thing they call their understanding,"[1] so that our workmen, though

[1] See Report of Departmental Committee appointed to Inquire into the Conditions of School Attendance and Child Labour, H.C. No. 311 of 1893.

[1] "Crotchet Castle," Peacock.

still without rivals in their ability to perform a task thoroughly understood, show a lamentable want of insight, a lack of initiative and resourcefulness. The value of manual training as an educational asset has long been recognised, but has been understood in far too restricted a sense: what we have to develop is the true craftsman's spirit; what we have to do is to open up a whole trade to the eye of a pupil, and so to teach him that it is only the well-balanced man who succeeds alike in an industry as in the office or in a profession—the man who fully recognises that he is not an engineer if he can only manipulate a lathe, that he is not a carpenter if he can only run a power saw or make part of a piece of furniture.

The type of trade school required, then, is one which will so plan its course as to permit its pupils to enter any particular trade at the right age with some general ideas as to the relation of their craft to other crafts and the industrial world generally, with a certain minimum of manual dexterity—the acquirement of which will require the expenditure of far more time than the two to four hours a week usually allotted to wood- or metal-work—and with a general knowledge of the elementary scientific principles underlying his craft. It must further closely co-ordinate its first year's work with the last year's work of the public elementary school, and its last year's work with the system of learning followed in the trade for which it caters—*i.e.*, it must appoint the right kind of teacher. Lastly, it must keep in touch with trade requirements, turning out its pupils mentally and physically fitted to cope with the requirements of industrial life, and, watching the state of the market, take care, so far as it individually is concerned, that the system does not foster that "insidious form of industrial parasitism, the suppression of the adult operative by relays of publicly trained and cheaply obtained boys."[1] The keynote of the whole solution is co-ordination; the dominant note is freedom, *i.e.*, there must be no slavish copying of foreign methods, and no insistence on rigid inelastic codes.

TECHNICAL TRADE SCHOOLS FOR BOYS.—The chief schools at present open in London are the technical day schools of—

Paddington Technical Institute.
Poplar School of Engineering.
Shoreditch Technical Institute.
Borough Polytechnic.
Battersea Polytechnic.
Woolwich Polytechnic.
Day Technical Classes, Central School of Arts and Crafts.
The School of Building, Ferndale Road, Brixton.

The schools at Paddington, Poplar, and the Borough are planned principally with a view to the needs of boys desiring to enter the engineering and various metal-working trades, but they are emphatically not of the type required by the rank and file spoken of above. They are for the most part apparently designed to meet the needs of boys who hope to attain positions of responsibility as foremen and managers. The courses in general extend over two years, but may last for three or even four, as at the Borough Polytechnic. The fees are low, and there are a number of scholarships offered giving free tuition and a maintenance allowance as well as entrance exhibitions.

The technical trade school for boys at the L.C.C. Shoreditch Technical Institute is planned—

to enable boys who intend to enter some branch of the furniture or other wood-working trades as cabinet-makers, carpenters, joiners, shop-fitters, pattern-makers, turners, wood-carvers, or draughtsmen to continue their general education, and at the same time to acquire such a knowledge of the artistic principles of design and the scientific principles of construction, of the properties of materials and of the use of tools, as will enable them at the end of a two or three years' course to enter a workshop with a full appreciation of the points to which they are expected to direct their attention, and with an intelligence so trained as to make them immediately of substantial use to their employer.

As at the other schools, the course is elastic, and practical workshop drawing, technology, and bench work form a large part of the curriculum; there are many scholarships and the fees are low.

The courses at the Polytechnic day schools are somewhat similar to those of secondary schools in which there are well-defined technical sides and need no further comment.

In the case of all the schools mentioned, there is an advisory committee of the same type and having the same functions as those quoted in connection with the girls' trade schools.

Revised Time-table for Day Technical School.

Subject	Monday	Tuesday	Wednesday	Thursday	Friday
First Year					
Algebra	9.30–10.30	—	9.30–10.30	—	—
Geometry	—	9.30–10.30	—	9.30–10.30	—
P. P. and S. Geom.	—	—	—	—	10.30–12.15
Arithmetic	—	—	1.15–2.0	—	9.30–10.30
Eng. Composition	3.15–4.30	—	—	—	1.15–2.0
English Grammar.	—	3.15–4.30	—	—	—
Elec. and Mag. ...	10.30–12.15	—	10.30–12 15	—	—
Mechanics	—	10.30–12.15	—	10.30–12.15	—
Machine Drawing.	1.15–3.15	—	—	—	—
Pattern Making ...	—	—	2.0–4.30	—	—
Fitting Shop ...	—	—	—	2.0–4.30	—
Geography	—	—	—	1.15–2.0	—
Freehand Drawing	—	1.15–3.15	—	—	—
Chemistry	—	—	—	—	2.0–4.30
Second Year					
Prac. Mathematics	11.15–12.15	11.15–12.15	11.15–12.15	11.15–12.15	11.15–12.15
English...	1–15–2.0	1.15–2.0	3.15–4.30	1.15–2.0	1 15–2.0
Mechanics	9.30–11.0	—	—	—	9.30–11.0
Steam	—	—	9.30–11.0	—	—
Elec. and Mag. ...	—	9.30–11.0	1.15–3.15	—	—
H., L. and Sound.	—	—	—	9.30–11.0	—
Machine Drawing	—	—	—	—	2.0–4.30
Workshop	2.0–4.30	—	—	—	—
Chemistry	—	—	—	2.0–4.30	—
Pattern Making...	—	2.0–4.30	—	—	—

Excursions to works to take place every other Tuesday afternoon during the summer term.

The time-table of the L.C.C. School of Engineering and Navigation is typical of a trade-school curriculum, the subjects studied and the number of hours devoted to each. As the school

[1] "Industrial Democracy," Webb.

is only in its second year and the scheme is probably as yet uncrystallised, criticism would be unfair. It serves, however, both as evidence that trade schools are complementary to, rather than a substitute for, a period of apprenticeship, and as an illustration of the limitations of such schools when considered as supplying the needs of the rank and file.

The writer gathers from the principal of the school at Poplar that he hopes shortly to arrange a special day department for boys who intend to go to sea. The scheme suggests that boys should enter the school at fourteen, leave at fifteen and a half to spend six months on the *Warspite* at Greenhithe, and then go to sea as apprentices, and is closely associated with the work of the Marine Society.

With regard to manual training, it is only fair to state that in some schools—as at Shoreditch and the Borough—rather more time is devoted to workshop instruction, also that the age at entry is lower, being twelve or thirteen, while at Poplar, as at Paddington, "a two years' pre-apprenticeship course of instruction is provided for boys leaving the higher elementary or secondary schools at not less than fourteen years of age"; thus the boys leave at an age when they may fit in with the custom of the trade as regards a five years' apprenticeship.

PREPARATORY TRADE SCHOOLS FOR BOYS.—We now come to the consideration of a class of trade schools which have been founded in many instances by private enterprise and are of peculiar interest at the present time, when the extension of the principle of compulsory attendance is being widely advocated as desirable on educational grounds, if only it be economically possible.

In a chapter headed "Compulsory Attendance?"[1] discussing the conditions of child labour, Prof. Sadler says:

> Custom and habit may prevent us from realising the social injury which is being done by such employment. . . . Yet this use of adolescent labour, unless accompanied by much educational care and regulation, interrupts at a critical point the course of physical, intellectual, and moral development which is required to produce the efficient adult citizen. . . . Such forms or conditions of employment may be immediately profitable to some individuals or groups of individuals, but are parasitic upon the national life, as they inflict grave and irreparable loss upon the young people concerned and upon the community to which they belong.

If the period of compulsory attendance be extended, there is no doubt that, for the rank and file, far more manual work, a great deal of physical training, and far simpler aims in regard to literary studies—something, in short, at once simpler and more practical—is needed. These conditions the preparatory trade schools have attempted to fulfil.

The most noteworthy school of this type is the Stanley School, South Norwood, founded by Mr. W. F. Stanley, of the firm of optical and scientific instrument makers, and opened in March, 1907. The aim of this school is "to teach the rudiments of mechanics, science, and applied art to boys having a mechanical bias, in order to prepare them for entering mechanical trades with a considerable knowledge of the work they may be called on to undertake." Primarily it teaches manual dexterity by plenty of workshop practice. The school week is divided into ten sessions of three hours' duration each. *One-half of each session is spent in the class-rooms and the other half at practical mechanics in the workshop.*

Commenting upon this system in a short report, Mr. Stanley says: "If a boy is sitting for three hours at a time in school it induces an unnatural habit of laziness that may adhere to him all his life. . . . The boy learns as much in one and a half hours, which appears to be the limit of his interested attention, as he learnt in three hours in an ordinary school." The boys have some fifteen hours' "manual training" weekly. They need a quantity of material, of course—every boy planes about 150 square feet of wood during his first term; this is found necessary in order that he may acquire the fundamental art in woodwork—and hence the problem of the cost of material and its ultimate value after being worked is of some importance. The material used is builders' waste and firewood as imported; the boys are taught to make the various articles needed in the school, boxes of bricks, toys such as come from Germany, models of trucks, cranes, &c. Mr. Stanley suggests that, by an extension of the system, the cost of technical education, at any rate in large towns, may be materially diminished.

The workshops—well planned and lighted and equipped with up-to-date machinery—and the class-rooms will each accommodate 150 boys, and thus, owing to the dual system in force, the school provides places for 300 boys. The fees are fixed at 1s. per week for the first year, but students whose progress is satisfactory may be elected "junior scholars" and have their fees remitted for the following year; in the third year a "junior scholar" may be elected a "senior scholar" under certain conditions, when he *will be paid for his mechanical work if of commercial value* at a rate to be assessed by the principal, provided that his general educational work has also been satisfactory. Boys between twelve and thirteen years of age are eligible for admission, and the number at present on the rolls is 111. Should the number of candidates exceed the number of vacancies, care will be taken to choose those boys likely to profit by the special training—sons of mechanics and boys showing special mechanical ability. In the class-rooms the subjects of instruction depend partly on the intelligence and needs of individuals, and the syllabuses in art, English history, geography, science, mathematics, and mechanics, though perhaps somewhat ambitious, are laudably so and eminently practical in form and scope. The public

[1] "Continuation Schools in England and Elsewhere."

spirit shown by Mr. Stanley in founding, building, and equipping this school might well find imitators, and the experiment will be watched with the keenest interest.

What is emphatically needed in London are more schools on the same lines, but with a closer correlation of the school and the particular industry pursued in its district. In this connection should be noted the necessity for greater devolution of administrative powers to local committees, who would be conversant with local requirements, affiliated, however, to some central body to avoid overlapping. The members of the Edinburgh School Board have placed themselves in the van of educational progress by their attempt to incorporate the work of various apprenticeship committees with the machinery of the board, and by their proposed installation of a central bureau of information affiliated to small local committees and the establishment of a register of employment on the lines of those existing but not yet officially recognised in London.

Other schools somewhat similar in type to the Stanley School are to be found at the Cockburn High School and the Holbeck Day Preparatory Trade School in Leeds, and at the Day Craft School at Brinscombe Polytechnic near Stroud. A detailed account of the latter was given by Mr. J. C. Medd in *School* for April, 1907.

Anyone who has thought of the question must admit that our present system of elementary education has proved inadequate to train a class of well-equipped mechanics and artisans, and, if we are not to fall behind in the race for industrial supremacy, it must be at least supplemented by an expanded and reorganised system of trade schools. The writer has attempted to show that the present trade schools, while doing excellent work, do not cope with the difficulty of training and educating our rank and file, devoting themselves rather to the needs of the future foreman or manager. Development along two lines is desirable. Secondary schools of a new type, with their attention fixed on the staple industry of their district, might be started; while trade schools proper along the lines of the Stanley School are certainly needed. In both cases it has been shown that it is quite possible to devise a scheme of work in which educational ideals are not sacrificed, while practical needs are consulted and advanced; it is entirely a matter of methods. Further, it is all-important that there should be close co-ordination between the primary school, the various types of secondary and trade schools, and the factory or workshop. The crux of the whole question is, of course, the age limit; step by step it will have to be raised. The nation in some way or other must bear the expense, but it will be abundantly justified.

Every student of the subject should study the introduction to "Industrial Democracy," by Beatrice and Sidney Webb, as well as the chapter on "The Entrance to a Trade" quoted above, and that on "Trades Unionism and Democracy"; Mr. Bray's illuminating study, "The Town Child," too, is full of valuable suggestions; while a critical study of the whole problem may be found in Prof. Sadler's "Continuation Schools in England and Elsewhere," reviewed in these pages last March, to which the writer would like to express his grateful indebtedness.

A COURSE ON HYGIENE AND PHYSICAL TRAINING FOR MEN.

By SIDNEY SKINNER, M.A.
Principal of the South-Western Polytechnic Institute, Chelsea.

I HAVE been asked to describe the course on Hygiene and Physical Training for Men which was begun in September at the South-Western Polytechnic Institute, Chelsea. I may assume that everyone accepts the statement that for all students physical fitness is necessary for good work, especially during the earlier years of life in the age of plasticity, and therefore I shall pass at once to the particular points of the scheme. Taking education as divided into two branches, mental and physical, it has been usual in our secondary schools for an entirely separate staff to deal with the two branches. On one hand, highly educated and trained teachers are engaged to train the boys' minds, and on the other, their physical education is left to instructors who are untrained educationally except that they may have had some training in gymnastics, generally a military one. Now in this plan there are two weak points: first, that the boys meet separate teachers who probably never confer with one another; and, secondly, that the physical training instructors have little or no broad culture.

To meet this difficulty we should have our teachers trained both mentally and physically, in order that, in their teaching, they may keep before their notice the needs of both the mind and the body; needs which we believe cannot be separated. The masters at secondary schools usually have been through a university course, and have gained a degree in arts or science; but the university has not given them any training on the physical side except in games, in which the English master has qualifications which put him before those of other countries. It has been suggested that a student, who has made up his mind to follow the teaching profession, should take, at an early stage of his university career, a course in hygiene, anatomy, physiology, and gymnastics. If, however, this suggestion is not adopted, it will be necessary for him to take later a special course including these subjects. Such a course is now available. This course is also available for primary-school teachers, who may select it as a third-year course under the Board of Education's Regulations (1908) for Training Colleges. For primary-school teachers this means a grant of, at a maximum, £40 for board and lodging, and the course may be taken immediately after the two years' general work at the training college.

I will now describe the course at Chelsea by giving an account of a week's work. Each morning begins with a lesson in practical gymnastics, with and without apparatus, on Ling's system. Thus, there are six hours' practical work. This is followed by an hour's lecture in the gymnasium on theory, in which, with the aid of a skeleton and blackboard, the anatomical and physiological meaning of the exercises is explained, and the reason for their order is discussed. The hour from twelve to one is devoted alternately to formal lectures on anatomy and on hygiene. In the anatomy class a monkey, as a substitute for the human body, is being dissected, and also Montaudon's full-size model of a dissected man is used when special reference has to be made to man. During the first term of the course this curriculum constitutes the morning's work. In the afternoon there are classes of boys to teach, criticism on this teaching, and discussion. There are classes on indoor games for the gymnasium, a form of exercise little practised in England. We have also formal lectures on physiology, with practical work, including the microscopic examination of the body tissues, and a lecture of one hour per week on psychology. The complete course will last thirty-six weeks, and, as the students advance, the curriculum will be modified to give them more opportunity for responsible teaching.

Some will ask why Ling's system of exercises, with the modifications to bring it up to modern knowledge, has been adopted. The answer to this is that it is the only one in which the gymnastic movements are based on accurate physiological and anatomical knowledge. The justification for this statement cannot be entered into here, but I will refer the reader to a paper by Mr. K. A. Knudsen, the Danish Board of Education's inspector of gymnastics, who has given special study to this matter. This paper was read before the Second International Congress of School Hygiene held in London last year.

If we are able to train on these lines a number of cultured students as teachers, we shall have men who, while taking their ordinary duties as form-masters, will be invaluable to their schools on the physical side; just as at present the master who can take a real interest in the boys' games is often the master who is most in sympathy with them in the class-room. Further, when the city schools are fitted with gymnasia and the daily exercises are given in a rational and scientific manner, we shall be more than able to counterbalance the want of proper playing fields.

Some will ask, are there openings at once for such teachers? and is there any future for the teachers when, by reason of age, they may be unable to continue the practical instruction? In answer to the first question I may say that the few who are already taking the course have appointments or work waiting for them. In answer to the second question, I believe that the future of the cultured gymnastic teacher will be the same as that of the other cultured teachers. After a time, through age, he may no longer be able to lead his class, but this is also true of the master who takes special interest in games. He is no longer able to take the active part, which he must leave to his juniors; but he will be able to take an intelligent and more mature interest in the gymnastics of the boys, just as some of the older masters watch a cricket match, and are able to give helpful advice and coaching founded on their personal knowledge. It should be noted, however, that many of the leading gymnastic teachers are men of mature or advanced years.

Lastly, I believe that this is a practical scheme, for it has been put forward in other countries, and in Denmark and Belgium has the support of the Government departments of education.

THE LETTERS OF QUEEN VICTORIA.[1]

WRITERS of text-books on British history, estimating the results of the Reform Acts of 1832, used to say that the subsequent diminution of royal power was largely the result of the fact that we had now a Queen, and that when again a man should sit on the throne we should find a difference. To which those who realised the profundity of the revolution then wrought, and the significance of William IV.'s failure in 1834 to eject the Whigs from office, replied that that revolution had finally excluded the Crown from all practical control, and that it did not matter, from a constitutional point of view, whether we had a King or a Queen. Since the death of Victoria at the beginning of the century, and that of her great Prime Minister three years earlier, we have learnt much which sets on one side both of these opinions. And now that we have, printed *in extenso*, a large selection of letters from and to Queen Victoria, during the first twenty-four years of her reign, it is evident to all that the revolution of 1832 put an end only to one form of royal influence, that, namely, which had been decaying since the rise of the younger Pitt, and which the wars against the French Revolution and Napoleon had made largely unnecessary. After 1832 it was no longer possible to "pack" the House of Commons with royal or aristocratic nominees for "pocket" or "rotten" boroughs, or to influence votes by means of bribery or threats. But in these volumes, which the action of King Edward has changed from the luxury of a few to the enjoyment of many, it is abundantly clear that there is still a large sphere of influence left to the occupant of the throne. Nay, the perusal of these letters makes Queen Victoria's activity in politics so evident that the very success of the book will lead some to discount it because her influence will seem so obvious that we are tempted to say, of course it was so. It is not, therefore, the sex

[1] "The Letters of Queen Victoria." Edited by A. C. Benson and Viscount Esher. Vol. i., xii+512 pp.; vol. ii., xi+472 pp.; vol. iii., vii+520 pp. (Murray.) 6s. net.

of our Sovereign that has made the difference. King Edward himself can scarcely do more than his mother did during the whole course of her reign, though it is quite conceivable that he may be doing less.

Indeed, the opinion has been expressed that Victoria took her duties too seriously. When, as a reason for her long withdrawal from social functions, a withdrawal which lasted longer than her period of mourning for Prince Albert would seem to have warranted, it was pleaded that the necessary work of the Sovereign made public appearances all but impossible, the reply was given that it would have been better if she had paid less attention to the details of business and more to the social duties which are laid upon the wearer of the crown. However that may be, and we who know little of practical politics can have no opinion on such a matter, we had begun to know already, and these volumes confirm the knowledge, that Victoria would not sign State papers without having the opportunity to read them through, and that she used those opportunities to demand a reason for the course of action proposed. The result of this insistence was that, Ministers being compelled to set forth, often in writing, the reasons for their conduct of public affairs, for the criticism of one whose position made it possible to require such justification of them, the Queen was often able to exercise a moderating influence on matters of both internal and, what was much more important, of external politics.

The letters now published do not extend beyond the year 1861, and we therefore do not yet possess the correspondence which would illustrate her views and influence in the later stages of our Imperial expansion. The limitation also confines us to her action during the life of the husband whom she so passionately adored, and whose advice she so faithfully followed. But even in these early years we have now all the material facts in her treatment, *e.g.*, of the famous bedchamber question at the beginning of her reign, and in her long struggle with Lord Palmerston, a struggle which reminds us distantly of her grandfather's struggle with the Whigs in his first decade.

The slightest mental review of the events of that quarter of a century will recall many events which are here illustrated, and which we need not therefore mention. We end, therefore, with a word of warning. There are many reasons which will, and quite rightly, induce our readers to purchase these books, either for themselves or for the benefit of their pupils. But they should realise that the fullest pleasure can be derived from these letters only by those who already have a fair working knowledge of British history during the years 1837–1861. The editors have prefixed to the letters of each year a short summary of the events to which they refer, and have also added notes of explanation, but these by themselves will not obviate the necessity, in order to secure a perfect understanding of the letters, for the study of some good manual at least of the life and reign of Queen Victoria.

TACITUS REVISED.[1]

MR. HENDERSON, dissatisfied with the accounts given by Tacitus of the military movements of 69–70, has studied the problems on the spot from the soldier's point of view. The outcome of his investigations is a remarkable book.

Here for the first time is a reasonable and coherent account of the strategy of the various parties. Tacitus is shown to have had no glimmer of insight into the military situation; his accounts are traced, with good reason, to camp-fire gossip and the unintelligent grumblings of the common soldier. Mr. Henderson has studied modern writers on the art of war, and his pages are illuminated by a number of pertinent extracts from James, von der Goltz, and others Using then the clues accidentally given by Tacitus, sometimes by Plutarch, he has with great skill worked out his schemes.

The most debatable of the campaigns here described is the defensive campaign of Otho against Vitellius. Otho has always been a puzzle: we know that he was a libertine, but on the theory that he was a fool and a coward his last days are inexplicable. Mr. Henderson shows that his plan was bold, daring, and brilliant, and that it might well have succeeded, but for the incapacity or treachery of his generals. The enemy was at Cremona; Otho planned to envelop him, by moving a force from Bediacum to the confluence of the Adda and the Padus, its place being taken by another force. To do this, it was necessary to make a flank march past Cremona; but the generals in command, by blunder or otherwise, allowed themselves to be drawn into a conflict before Cremona itself (which they ought to have avoided by a detour). Hence they were defeated. Otho heard the news at Brixillum, whither he had retired in order to control the whole operations; refusing to be the cause of further bloodshed, he secured his followers' interests as far as he could, and killed himself.

The evidence by which this plan is divined is too complicated to be given here; it is discussed in the appendix to the book; it rests on the emendation of one number in Tacitus (*quartum* to *quartum decimum*), which, as it stands, is impossible to be true, but all other attempts to explain the operation are failures. We may add that the picture of Otho's last hours is noble.

The other two campaigns are that of the Flavian armies and the Rebellion on the Rhine. Here Mr. Henderson has fewer difficulties to contend with. The story is equally convincing, if it is not so new. All the chief characters of the actors in the drama are drawn with life-like touches.

There is only one thing that offends in this admirable book: its author's over-ornamented style

[1] "Civil Wars and Rebellions in the Roman Empire, A.D. 69–70." A Companion to the Histories of Tacitus. By B. W. Henderson. xvi–300 pp.; with maps and illustrations. (Macmillan.) 8s. 6d. net.

Such stories may well be left to do their own work, without metaphor and personification running riot. Many a phrase that may pass in the lecture room is out of place in a book. But we are heartily grateful to Mr. Henderson for this book.

THE EDUCATIONAL PROBLEM IN RURAL SCHOOLS.[1]

FOR at least a decade a few enthusiastic teachers here and there have been experimenting with the problem of the needs of rural schools in England. Their efforts have received no pecuniary assistance and very scanty recognition from the Board of Education, but there are signs (of which the publication of this pamphlet is one) that the Board has at last awakened from its lethargy, and is beginning to realise that all is not well with our rural education. A "prefatory note" informs us that the Board accepts no responsibility for the opinions expressed, so that, although we believe the Board has expressed officially the opinion that the problem has passed beyond the experimental stage, we are still open to doubt whether or not its mind is made up on the subject. Personally, we think there is much yet to be done, and that a great many experiments will have to be made before the final solution is reached.

The pamphlet is a development and enlargement of a series of four articles which appeared in *The Times* in 1905, and as "it deals with matters of so much interest to sparsely-populated districts, not only in this country but in other parts of the King's dominions, with the consent of *The Times* the Board have thought it worth while to make the information available in a fuller and more permanent shape than is possible in a newspaper." Hence its publication.

The report is divided into five sections. The first sets out the causes which led to the movement; a description of the special conditions existing in North America, showing that "many circumstances differentiate the problem from that in England"; and the history of the parts played by the "Order of the Patrons of Husbandry," by "Farmers' Institutes," and by the efforts of Sir William Macdonald in setting it afoot.

Section ii. will probably be found the most interesting and illuminating to an English teacher, as it discusses the adaptation of the curriculum to rural needs. Sections iii. and iv. are taken up with an account of the consolidation of small scattered schools in the United States and Canada, in circumstances which scarcely arise in England; and the final section deals with the crux of the whole question—the training of teachers. This is undoubtedly the point whence we must start, for unless the teachers are imbued "with a living realism of what they teach," the rest is foredoomed to failure.

Nothing is said about the inspection of these schools, though next only in importance to the training of the teachers is the selection of inspectors, who should also be imbued with a living realisation of what the teachers should teach and have discovered by practical experience the difficulties they have to encounter. The fear may be expressed that the present inspectorate is in general some distance from this ideal.

The second half of the pamphlet consists of appendices giving details which are referred to in the articles.

[1] Board of Education Educational Pamphlets. No. 13, "The Problem of Rural Schools and Teachers in North America." 70 pp. (Wyman.) 6*d*.

THE CORRELATION OF THE TEACHING OF MATHEMATICS AND SCIENCE.[1]

By Prof. J. PERRY, F.R.S.

I TAKE it that the word science means physical science, and that the term scientist includes the mathematical physicist, but does not include the mathematician who is enlarging the scope of pure mathematics; it includes all men who are teaching mathematics to students who wish to use it in physical investigations. It may be well to restrict the term mathematician to a student of mathematics who is enlarging the scope of pure mathematics. I have been corrected by a senior wrangler, who is himself a mathematical physicist, for saying that a certain other senior wrangler was a mathematician. "No, he is a mathematical physicist; he would not be pleased to hear himself called a mathematician." I suppose we must consider the cases of: (1) The training of all children, the citizen of the future being supposed to be taught science for various good reasons: one, that he may take an interest in those things which are more important in transforming the world than all others; another, that he may learn scientific method, which will cause all his actions to be more efficient. Every man who has done important things in history was distinguished by his having scientific method, not perhaps gained in our modern way. We want the average man to have it now. (2) The training of the boy or man who intends to enter a profession of applied science. (3) The training of average men who intend to teach mathematics and science. (4) The training of a few mathematicians and scientists who may possibly become eminent, and may or may not become teachers. I do not think that the early training of any of this class should differ from that of the others.

When I was told that I had the honour to open this discussion I forgot that the word "teaching" was in the title. I meditated on the quite different views taken by the mathematician and the scientist about a scientific investigation. The one insists upon mathematical rigour in every part of the reasoning. As I believe that there is hardly one rigorous proof of anything, I had better say that he is orthodox. The other says that tedious and apparently exact mathematical proofs are not only unnecessary, but perhaps harmful if there are physical proofs. In investigations in heat, hydrodynamics, elasticity, electromagnetics, &c., if we follow orthodox methods we can take up only easy questions; if we use Heaviside's operators, including such unorthodox things as divergent series, we can investigate questions which the orthodox person would not dream of touching. It is easy to prove that a result is correct, and that no other correct result

[1] An address given at a conference of the Mathematical Association and the Federated Association of London non-Primary Teachers on November 28th.

is possible. But, alas! in the present state of knowledge Mr. Heaviside himself cannot give an orthodox proof that the use of his operators is legitimate. And I have no doubt many of you know the following quotation from the preface to the second edition of Lord Rayleigh's "Sound": "In the mathematical investigations I have usually employed such methods as present themselves naturally to a physicist. The pure mathematician will complain, and (it must be confessed) sometimes with justice, of deficient rigour. But to this question there are two sides. For, however important it may be to maintain a uniformly high standard in pure mathematics, the physicist may occasionally do well to rest content with arguments which are fairly satisfactory and conclusive from his point of view. To his mind, exercised in a different order of ideas, the more severe procedure of the pure mathematician may appear, not more, but less demonstrative."

This opposition of the mathematician and scientist can hardly be avoided, but it need not create bad feeling. The scientist has the greatest admiration for the mathematician, but he asks for more sympathy and no dictation at all. As practically all branches of mathematics have sprung from the study of science, might not a capable mathematician see some prospect of glory in devoting his life to a proof that Heaviside's operators are legitimate? We know that they are, but we have no orthodox proof. It is to be remembered that in the days of great scientific development, the days of Leibnitz and the Bernouillis, the days of Lagrange, the days of Fourier, powerful methods of analysis were used which were not rigorously proved to be legitimate until long afterwards. As to teaching, are we not agreed that mathematical chairs and fellowships should be so well endowed that no mathematician shall be compelled against his will to attempt to be anything but a mathematician? At present we compel him to attempt pedagogy.

It is always forgotten that those very qualities which cause a man to become a great investigator in pure mathematics cause him to be unsympathetic with the student who is not also a pure mathematician. How many colleges are there with only one teacher of mathematics? And it is almost always the case that he is a mere mathematician, and therefore quite incapable of teaching the average student, whom he looks upon as a stupid person. I know of colleges where mathematicians of the highest rank are put to teach mechanics to average boys who are beginning the subject. It is one of the most harmful of things for students known to me. It is probably harmful to the mathematicians also; but the opinion of a man like Sir A. Greenhill ought to be asked on this point. It seems to me like harnessing Pegasus to a common wagon.

It is only another example of how a clever specialist gets credit for being an all-round great man, able to give the best advice on subjects which he has never thought about. In England we think that if a man is a great mathematician, his voice in politics is important; if he is a great chemist, his opinion on women's suffrage is valuable.

Mathematicians attempt also to act as examiners, or they control examinations. They even attempt to write text-books upon science. If you open such a book, say on hydrostatics, it is all easy pure mathematics; easy examples of integration, for example, disguised by the use of such words as "pressure" and "depth." And yet when a simple algebra problem is set about apples or the hands of a clock, nobody supposes the book to be a treatise on gardening or horology. A treatise by a mathematician is not necessarily scientific because it contains words like mass, temperature, and electromotive force.

The scientist needs teaching which will give him such a command of mathematical methods that he can apply them in any new problem with ease and certainty. Whether or not he has studied rigorous proofs that these methods are legitimate, he certainly must gain familiarity with them by actual use. I believe that some use, and even much use, ought almost always to come before the proofs, and in some cases the proofs need not be studied at all if it is felt that their study does not tend to utility. To take familiar examples: a student ought to use logarithms long before he approaches the proof of the exponential theorem. He ought to use Taylor's theorem long before he studies what the mathematician might call a rigorous proof of it. He ought to develop arbitrary functions in Fourier series long before he studies an orthodox proof that such development is possible. He ought to work many problems involving the use of spherical harmonics or Bessel functions long before he studies these things in the way that a mathematician insists upon as necessary.

An old and distinguished naval officer wanted to enter a great naval college merely to rub up his knowledge of the reasons underlying the methods of the navigating lieutenant. I could have given him what he wanted easily in a month. He was told by the principal that he must begin Euclid's geometry again, and that he must study mathematics for years. The principal of the college was a mathematician.

Again, there are always separate examinations in geometry, algebra, trigonometry, and mechanics, because the mathematician insists upon it. A good teacher will and does teach each of these through the others; in fact, they are all one subject. But, unfortunately, the separate examination system causes some of them to be taught out of all proportion to their educational or other utility. We have all, probably, quite different views as to their real utility. Thus I consider almost the whole of deductive geometry to be a university study, or even perhaps a post-graduate study. It is certainly not needed in the elementary study of science or in the study of those parts of mathematics which need to be known to the young scientist. I think that most scientists hold my views, but probably no mathematician does. I take it that the method of study into which Newton was forced, became, because of Newton, the favourite English mathematical study, and we know that it kept English mathematicians back for a hundred years. In the shape of elementary deductive geometry it is keeping back every schoolboy now. I do not believe that any average boy, indeed I do not believe that any boy under sixteen, understands the very first theorem in the first book of Euclid. At all events, I suppose that all scientists are agreed in saying that, however mathematical reasoning may start or have started, it becomes abstract as it develops, and so the average boy is never taught mathematics, and cannot be taught. He may, however, be taught mathematical methods as any other physical science is taught, say mechanics or heat—with experiment and common-sense reasoning. But we must not allow the mathematicians to interfere. To them the study of geometry is really logic, and it follows that there must be a division of the subject into propositions. We have long given up the use of catechisms in teaching history and science; a series of propositions in geometry is just as foolish, whether we follow Euclid or not.

I mention these differences in the points of view because mathematicians do attempt to teach and to examine and

to control examiners. In my presidential address to the Physical Society in 1907, I pointed out that the peculiar conditions of one examination at one British university had led to the creation of 90 per cent. of elementary algebra and trigonometry in Great Britain, this unnecessary 90 per cent. being as complex and tricky as it was possible to make it. Until all this sort of thing is done away with, the marriage of mathematics and science seems to me like that of December and May—the marriage of a man of seventy with old bachelor habits to a bright young virgin of seventeen. The teaching of mathematics still follows the old lines; we are compelled by examination systems to refrain from suggesting drastic reform, and we can only tinker with it. The success of what is called *practical mathematics* in every technical college and school in the country, in interesting hundreds of thousands of students more than they are interested in any other subject, proves that it is possible to remove the incubus which has stupefied so many generations of schoolboys.

Just as in trigonometry the labour-saving rules of the surveyor have been dignified into a quite unnecessary subject called "The Solution of Triangles," so we have labour-saving rules in mechanics and kinetics and other parts of mathematical physics. A chapter of a text-book is devoted to the proof of some of these rules, and there are thirty exercises, each of which a student can work out in about twenty minutes. This is very handy for examination purposes, when there is a very limited time, but it is pernicious in all other ways. Now why do I say that it is pernicious? First, because it tends to make a man think too much of labour-saving rules, of formulæ. Fundamental principles are neglected. Secondly, a man who is not constantly teaching forgets these rules quite quickly. If he desires to work a problem, he thinks of how once he could do it at sight, but he has now forgotten all about it. He remembers how much trouble the original study gave him; he cannot again face such a worry, and he is disgusted with himself and his mathematical training.

Now, my students are able to tackle difficult new problems in statics or kinetics, and they can be certain that their answers are right, but they must get plenty of time, perhaps ten times as long in some cases. I give them a few principles only, such as Newton's one great law of motion, sometimes called D'Alembert's Principle, and I let them see what it becomes in a number of cases. But whatever illustrations I may give, I always point out that it is merely an application of the one general principle. They get so thoroughly acquainted with this as a general principle that they can apply it readily (exercising their well-developed common sense) to exceedingly difficult-looking problems such as may turn up, and furthermore they really cannot forget it. All through our teaching we give all sorts of information which a student can at any time find in books if he knows how to use books; things not essential to an educational study. When we give an investigation we do not sufficiently impress a student with the fact that it is merely an illustration, an algebraic development of some simple general principle. He learns it detached from all other investigations, and he has therefore twenty times as much to remember as he need have, so of course he forgets it all. This evil is easily traceable to the influence of the mathematician on examinations, and therefore on teaching, at all events in such a subject as dynamics. And because the method is orthodox in dynamics, everybody brought up in that way—the science teacher, for example—is induced to neglect common sense equally in the teaching of other subjects. To keep ourselves right, to prevent fashion and habit or bad example from leading us astray, we ought to stick to one great principle—our object is not to convey information, or a thousand labour-saving rules, our object is to teach scientific method!

I have studied the suggestions of the three committees of the Mathematical Association—one on the teaching of arithmetic and algebra, one on the teaching of mechanics, and one on advanced school mathematics. The first of these will be found reprinted in the report of the British Association Committee (1906, York) "On studies most suitable for elementary schools," which I would advise everybody to read. It contains also the report on the teaching of mathematics by a committee of the Institution of Civil Engineers, and a statement of the views of the Board of Education on the teaching of elementary mathematics. All these reports appear to me to be excellent.

Will you forgive me for saying that, all so excellent as the syllabuses of the Mathematical Association are, they seem to me to possess too much of the orthodox mathematical spirit? There is too much hankering after a kind of logical perfection which is impossible in the teaching of the average boy. I am afraid that what seems to you simple is to him complex, and what seems to you complex is to him quite simple. As a result, you have not made his studies as interesting to him as you might, and whatever is uninteresting to him is uneducational. Besides, you seem to have forgotten that practically all that is bad in school teaching comes from our having separate courses of study, each with its separate examination.

In arithmetic, mere number seems to you simple. To the average man this is an abstraction not perhaps so incomprehensible as abstract ideas of time and space, but never studied even when he shepherds his family to the seaside, and he says he has twenty-four parcels, a perambulator being one and a hat-box one.

It used to be that a boy had almost nothing explained to him; he did his multiplication, &c., mechanically. Now we are always explaining and philosophising. Either method is bad. A good method can be made up out of a mixture of the two. The philosophy of nearly all things, just as in swimming and playing whist, ought to follow the doing rather than to precede it. Some teachers maintain that the algebraic method of detached coefficients is valuable for the comprehension of arithmetical multiplication. I would as soon recommend the study of English through Latin and the use of steam hammers for cracking nuts.

A boy thinks of quantity, and the sooner you get him on to algebraic arithmetic the better. 6 cows $\times$ 3 = 18 cows, or 6 cows $\div$ 3 = 2 cows; he has no difficulty in these. Again, in finding the area of a rectangle he has no difficulty in understanding 6 inches $\times$ 3 inches = 18 square inches. Again, we never find that he has a difficulty in understanding work to be

$$6 \text{ pounds} \times 3 \text{ feet} = 18 \text{ foot pounds},$$

and he at once agrees to

$$6\,b \times 3\,a = 18\,ab.$$

But in the abstract all these are just as complex as

$$6 \text{ tables} \times 3 \text{ chairs} = 18 \text{ chair tables}.$$

He has no difficulty with anything of this kind if he knows the nature of the product. He says that to talk of 18 chair tables is nonsense, because nobody has ever shown him that a sensible meaning might be given to a chair table. Now I believe that $6 \times 3 = 18$ really means to him 6 feet or shillings $\times 3 = 18$ feet or shillings, and the

more you reason as if these were numbers in the abstract the more you confuse him.

In your mechanics syllabus you object to

$$\frac{\text{weight}}{g} = \frac{\text{Force}}{\text{acceleration}}$$

and you insist on using

$$\frac{\text{Force}}{\text{weight}} = \frac{\text{acceleration}}{g},$$

but either is logical and simple to a boy. Even in that same syllabus you allow a boy to divide quantities of different kinds by one another, and this is right, for a boy will see no difficulty. A man swims 160 yards in two minutes. Of course the average boy says at once that the speed is 80 yards per minute. He has divided 160 yards by 2 minutes.

It is astonishing how much a boy can take in intelligently if you will only not worry him by telling him how difficult he ought to find it. Thus when a weight of 3 lb. is lifted 2 ft. the work done is 6 ft. lb. When a force of 3 lb. acts at a distance of 2 ft. from an axis, the moment of the force is 6 lb. ft. Now this is a different thing altogether, and yet a boy has no difficulty in thinking about them both. All this leads to the idea that all parts of elementary mathematics ought to be taught along with and through science, and by the same master.

As I said at Johannesburg, "Children should in their play be accustomed to measurement; playing at keeping shop, selling things to each other by weight and measurement, paying for things in actual money. Measurement of things with callipers and scales would accustom boys of eight to the use of decimals. Things requiring memory can be learnt only in early youth; weights and measures, the multiplication table, languages, plays involving spelling, the repetition of poetry, surely these are the things that ought to occupy children when very young. The reasoning powers will gradually develop in a healthy way if only they are not forced; powers of memory and of observation are at their best, and only need guidance to equip the boy with stores of classified facts. Thus, too, this early time is the time to let a child find out for himself that if he can read he can use story books, and if the people about him are fond of reading he is certain to become fond of reading also.

". . . And after a boy reaches the age of ten he may sketch and draw plans of his schoolhouse and the roads or streets about it; he soon can use a map when walking or cycling, and he knows that maps may be of different scales. I would lead him up to the vector subject of geometry only slowly, through maps useful to himself, through problems on heights and distances and the like. Do you remember a story called 'Sandford and Merton,' where a Mr. Barlow taught two boys by methods surely the most interesting and delightful? It is between the years of nine and thirteen that boys need a Mr. Barlow, and I can imagine one Mr. Barlow being able to look after ten boys, and perhaps more. There were no formal courses of study in many subjects such as exist in schools, each in its water-tight compartment. One night the boys are interested in the stars; that night he tells them about the stars, and lets them look through a telescope. He gives them stars and solar system just so long as they are interested. He uses a globe as well as mere maps in teaching them geography, but the soul-destroying idea of a course of study on 'the use of the globes' does not commend itself to him. By pleasant experience they learn that there are rules about levers and parallel forces, and with simple apparatus he illustrates these rules. This is the time, say at the ages of eleven to thirteen, when boys ought to have a course of experimental science, weighing and measuring accurately, learning the rules of mensuration, taking specific gravities, learning something of barometers and thermometers, of magnetism and currents of electricity. People do not seem to know how cheaply and easily quite a lot of interesting apparatus may be rigged up by boys. They make glass-rubbed electric machines and Leyden jars out of bottles bought cheaply from grocers. They can arrange an electric telegraph, and after they have learnt the code they can signal all sorts of messages to each other in all sorts of ways, not merely electrically, educating the senses of hearing and sight and touch. Their hands are educated by the use of tools, and so they learn all sorts of properties of materials. Thus I advocate a course of elementary science which, to be followed by a boy, involves the continual use of computation of all kinds; which keeps a boy interested; which satisfies his voracious curiosity; which is first qualitative, and may be made just as quantitative as the boy and teacher please to make it."

In the perfect school all form-masters below the middle fourth (I wish I could say fifth) ought to teach mathematics and natural science as well as Latin and English and French and German and geography and history and many other things. It may be objected that if in one form (less than half the present size) a master teaches many subjects, the boy best in Latin may be worst in algebra, and there will therefore be great differences in the calibre.

I know from experience that, at all events in practical work of any kind, and I believe in all the work of such a form, it is actually good educationally to have considerable difference in the calibre of the boys. If a group in charge of any investigation consists of three boys of different capabilities in that subject and of other kinds of differences in other subjects, the mutual education going on is very noticeable, it is very valuable.

Some of you will think my ideal system to be impossible, but as I contemplate much better salaries and twice as many masters, a little reflection will show that it is quite possible in the future. It is possible even now to have it that from top to bottom of the school there shall not be a master who is only a specialist, who is a mere mathematician, or who is merely a classical scholar or a mere chemist or a mere anything. The attainments of all masters shall be such that no one will ignorantly sneer at any subject studied at the school. In the upper forms I presume that the present system cannot yet be greatly changed, but just as the geography and history of Greece and the Greek and Roman empires ought to be taught by the form-masters along with literature and grammar, so I consider that geography generally, and history generally, ought to be taught by them. I do not mean that elaborate courses ought to be given, but lessons may be given incidentally. I know that some intelligent masters do this at present, but all the masters ought to have sufficient culture to do it.

The aim ought to be, not to make a boy a geographer or a historian, but to give him such a general interest in all these subjects that he will read things for himself. We ought not to aim at producing finished products either at school or the university. We ought to try to produce learners.

All form-masters ought not only to know at least two subjects well, but to have such an acquaintance with all the other subjects taught at a school as to be able to talk intelligently with their boys on all these subjects, although they may not be able to teach. If my

ideal is impossible now, at all events we can work towards it.

I take it that the specialist, if he teaches at all, ought to teach university, or rather post-graduate, students. Until a man takes his degree his teachers ought to be men of general intelligence. When a man has become a Greek scholar he may, if he sees fit, neglect all other studies; he may neglect Greek archæology even; when a man becomes a mathematician he may neglect all applications of mathematics if he thinks it better for his pure mathematics investigations.

Especially is it important that every master of a school should consider himself responsible for English composition. If a boy writes a description of anything he has done in the laboratory or elsewhere, it ought to be an exercise in English. No sensible teacher now gives marks for lecture notes, but rough laboratory notes ought to be accompanied by clear accounts of what the boy has done, illustrated with good sketches and squared-paper curves.

For the present it is too much to expect that higher form classical-side masters will be able to teach physical science, so here, and also in higher modern-side forms, there will continue to be the set or block system with other masters than the form-masters. But each such other master ought to teach several subjects. In criticising this it must be remembered that no boy in a school ever reaches the level in mathematics which requires a mathematical specialist to teach him, and it is the same in physics and chemistry.

I was a pupil of the famous Dr. Andrews, of carbonic acid fame. He was supposed to teach only chemistry, but in truth he taught chemistry and physics, and we learnt much more about each of these subjects than if we had had two teachers of two detached subjects

I remember that when I was ten or eleven years of age I had a master who taught me geography and history and grammar and literature in a delightful jumble; but his lessons were educational. He would suddenly tell us on Friday that each of us was to write him a letter for Monday morning on any subject whatsoever. Observe, we only did any particular kind of exercise occasionally. If we had had to do it every week it would have bored us and him. He gave us four, and only four, delightful lessons on philology. If he had recently been to see Barry Sullivan or G. V. Brooke acting Hamlet or Richard III. or Macbeth or Othello, he read and made us read extracts from these plays, and he made history and literature and geography and other things that boys call "subjects," fairly lovely to us. In the science lessons, one day he would have for us a great basket of buttercups or daisies, and each of us would pull his specimen to pieces as he did, and we followed him in all his explanations of what we saw. Another day he brought in a capillary glass tube, and he blew a bulb and filled the thing with mercury, and marked on it the freezing and boiling points of water, and taught us the use of a thermometer. If he had had modern-school laboratory appliances I feel sure that he would have followed the methods of Dr. Armstrong.

After a boy has made up, by the use of objects, a multiplication table, I feel sure that you ought to leave mere number and get to quantity, so that he ought to use decimals quite early. To teach him the use of decimals and to educate his hand and eye and judgment, you allow him to measure things. But how do you do it? Often in the most uninteresting way! He is made to measure a certain length, to weigh an object, &c., and his answers are compared with the real length or weight, &c. Contrast this with the following exercise. He is given a block of iron, and he measures its length, 3·27 inches, breadth, 2·63 inches, thickness, 1·95 inches. He finds its volume to be 16·77 cubic inches. He readily uses contracted methods. Why will you try to stop him? He is given a cube 1 inch in edge of the same kind of iron. He takes it to the scales, and finds it weighs 0·26 lb., so he computes the weight of his block to be 4·36 lb. He now goes and weighs it, and is delighted. Do you see where the difference comes in, and how interesting it is to find his computation agreeing with reality? And that same piece of iron was allowed to displace water in a vessel, and the displaced volume was found experimentally to be nearly 16·77 cubic inches. He now takes an irregularly shaped piece of iron, finds its volume by displacement, computes its weight, and weighs it by the scales. He sees at once how it is that perfect agreement cannot be expected.

Common-sense explanation accompanying experiment ought to be the rule. Do not teach abstract geometry at all; teach mensuration with the help of arithmetic and algebra and weighing and measuring. Do not be afraid to introduce a boy early to sines, cosines, and tangents, and the calculation and actual measurement by surveying, &c., of heights and distances. Boys are intensely interested in such work, and it is educational. But how awfully dull it may be made! It astonishes me to see how little comprehension there seems to be of the proposals made by the British Association committees. We recommended experimental geometry with common-sense reasoning, and everybody seems to think that we asked for a babyish use of rulers and compasses following a series of propositions. We asked for interesting work in weighing and measuring, and care is taken that all such work shall be made as uninteresting as possible. We recommended some work with graphs on squared paper, and some teachers do nothing but graphs, and there are dozens of school books to help on the craze. It reminds me of a friend who does so many things with cement that I almost believe that if he wanted a new umbrella he would make it of cement. Some teachers think that squared paper was invented merely to illustrate the solution of certain simultaneous or quadratic equations.

I do not say that some teachers are carrying our reforms too far; I say that they do not at all comprehend the nature of the reforms suggested by the British Association and other committees. In the higher school work we ask for a rapid advance to the calculus and the use of calculus methods in teaching kinetics and physics, and this is being carried out in such a way that all algebraic work is getting to be quite inaccurate and slipshod. Surely there can be just as good mathematical drill in using the calculus as in the usual tricky algebra and trigonometry. Indeed, the drill is on exactly the same kinds of algebraic expressions. It used to be that if a man was doing calculus there was no need to inculcate carefulness and accuracy, because he had already been well drilled. Accuracy in algebra, accuracy in measuring, each of these is as essential as the other to the success of our reforms. The surprising thing is that many teachers seem to have no individuality, no originality, nor even the power to think for themselves at all. The principle on which we work seems to us quite simple, and they think they are following it; but really they no more understand it than the average Mohammedan understands the Christian faith.

A fixed ritual will be looked upon as a curse by the good teachers of the future, but it almost seems that at present we must impose some system of teaching so complete in every detail that any teacher can follow it exactly.

We must not only tell a teacher to make his students' experimental work interesting, but we must tell him exactly how to do this. Dr. Armstrong's valuable addresses on the teaching of science seem to teachers to be masses of vague generalities, and if he is to succeed I feel sure that he must do what his soul abhors, and describe a lot of experimental discovery work and exactly how it is to be put before a class of boys. When he says that a mere knowledge of facts is unimportant—we must cultivate scientific method—how few teachers there are who see what he is driving at. Yet he is only enunciating a principle which has been advocated by all educationists—Milton, for example, and Herbert Spencer—and has been acted upon by all good teachers who had freedom to teach as they pleased.

Dr. Armstrong deals more particularly with the very young boy. His work is experimental, with no difficult computation, with common-sense reasoning. To the age of fourteen, when, of course, every boy ought to be able to use easy calculus methods, his work is still mainly experimental. He has become more accurate in his algebra work and in his weighing and measuring. He has taken certain things in hydrostatics, pneumatics, chemistry, heat, and even electromagnetics as parts of one general elementary study. At the age of twelve he had experimented on levers and friction in machines, and knew something about mechanical and other forms of energy and centrifugal force. Later he experimented upon the triangle of forces and resolution of forces, using graphics, and learning of sines and cosines about the same time as he was studying heights and distances. But he had broken wires and beams long before. After he began kinetics he quickly had a clear idea of speed and of the fundamental notion of the calculus. Only at sixteen does he begin to reason about the addition, subtraction, multiplication, and differentiation of vectors generally. By means of water flowing into and out of vessels, with the conical pendulum and other apparatus, he learns exactly what is meant by "force is rate of communication or change of momentum," momentum being a vector quantity, and he sees by many illustrations that with this fact well understood he has the easy means of solving numerous problems which now seem hopelessly difficult to many B.Sc.'s. But before this he has learnt of the analogies between motion of translation and angular motion of rigid bodies, and he now sees the analogy between constant centripetal force on a particle and constant torque about an axis at right angles to the axis of a rotating body. Throughout all this I have been speaking of the average boy. At sixteen or seventeen he has a good quantitative knowledge of physical science; his mathematical tools are familiar to him, and he can apply them at once on any new problem. His common sense is in a wonderful state of development. He was fond of reading when young, and he knows now how to use books. It would be waste of time to teach him 95 per cent. of the mere facts which he can find in books by himself. He is not going to give up this kind of study when he leaves school; he will go on educating himself by means of it until he dies, for he loves it and cannot forget it. Just imagine all this in combination with his other studies in literature and history. Surely he will make a fine citizen who, when he invests his money or gives his vote at an election, or when he sits on councils and committees or on the magistrates' bench, will feel that he can act on opinions of his own, and that he is not at the mercy of impostors.

In conclusion, may I say that if any man thinks me to be a nuisance, that I am doing harm in advocating changes, I do not mind his saying so if he gives reasons for his belief? No personal friend of mine need fear any diminution of my friendly feeling through his doing what he thinks to be his duty. I hope that nobody will feel unfriendly because I think it my duty to express myself clearly.

After all, nobody here can think that I am referring to him when I say that a mere specialist cannot teach. His presence at this discussion is in itself an evidence that he is not a one-sided man. It used to be that mathematics, physics, chemistry, &c., were completely detached from one another and from all other subjects at a public school. But I can say now with confidence that every man in this room who has had more than one year's experience as a master in a public school of these days, must already have lost that detached attitude if he ever had it.

All I ask is that this action, of which we are all conscious, shall be allowed to go on unchecked. Until salaries are doubled and forms halved in their numbers of boys there will be things very open to criticism. Our weaker brethren, in their honest endeavours to be interesting, will muddle things up. Good systems will be established, but the unbelieving teacher or the ignorant one or the overworked one will make stupid rituals of them. Happily, there are many good teachers who are fond of teaching, and go on teaching, although they might make much more money otherwise. It is our duty to make the public believe in these men and see that they are better paid, for that is the only way in which a greater proportion of able men are to be induced to become teachers.

THE STUDY OF GERMAN IN PUBLIC SECONDARY SCHOOLS.

A letter on the position of German in secondary schools has been addressed to the President of the Board of Education by representatives of the Society of University Teachers of German, the Teachers' Guild of Great Britain and Ireland, the British Science Guild, the Education Committee of the London Chamber of Commerce, and the Modern Language Association. By the courtesy of the honorary secretary of the Modern Language Association we are able to print the letter, which we are hopeful may have the result of directing greater attention to what might well be one of the most important studies in our secondary schools. An article upon this subject, by Mr. E. L. Milner-Barry, appeared in The School World for October, 1899.

We, the undersigned, desire, on behalf of the bodies whose names are appended to our signatures, to represent to you the serious neglect into which the study of the German language in public secondary schools is falling.

That the number of pupils in these schools who learn German is small is incontestable, but we have reason to believe that in the schools below the first rank this number is not only small, but diminishing.

Evidence of this is supplied by the following tables, which show the number of candidates who entered for the Oxford and Cambridge Local Examinations in certain years, and the number and percentage who offered German:

Oxford Local Examinations.

Junior.

	No. of candidates	No. taking German	Percentage
1895	3,226	440	13·7
1900	4,455	441	9·8
1905	7,011	505	7·2
1907	8,327	479	5·7

Senior.

	No. of candidates	No. taking German	percentage
1895	1,414	351	24·2
1900	1,926	282	14·6
1905	3,664	414	11·2
1907	6,370	360	5·6

CAMBRIDGE LOCAL EXAMINATIONS.

Senior.

	No. of candidates		No. taking German		Percentage	
	Boys	Girls	Boys	Girls	Boys	Girls
1895	680	1,272	80	426	11·7	33·5
1900	921	1,366	62	313	6·5	22·7
1906	1,721	2,015	108	216	6·3	10·7
Junior.						
1895	5,033	2,696	396	557	7·5	20·6
1900	5,413	2,964	319	483	5·9	16·3
1906	4,671	3,034	345	314	7·3	10·3

It will be seen from the above figures that the percentage who offer German is steadily diminishing, and that German as a school subject is being gradually elbowed out.

In this connection we would bring to your notice the fact that the Reports of the Education Department of the London Chamber of Commerce have repeatedly directed attention to the inadequacy of the supply of candidates for clerkships who are acquainted with foreign languages. It is from the schools which send in their pupils for the Oxford and Cambridge Local Examinations that the great bulk of the clerks come.

Further evidence of this lamentable decline in the study of German is supplied by the Report of your Board for 1906–7, which says: "German in Wales, as in England, is finding difficulty in maintaining its ground" (p. 83), and the Report on Secondary Education in Scotland for 1907, in which occurs the statement: "German can hardly be said to be holding its ground. . . . Enquiry shows that in England the phenomenon is still more strikingly apparent" (p. 23).

Evidence is also before us to the effect that the universities find it increasingly difficult to obtain students prepared to take up the higher study of German.

We are of opinion that this decline of German as a secondary-school subject is a matter of grave national importance:

(*a*) From the point of view of general literary culture.

(*b*) From the point of view of the public services.

(*c*) From the point of view of practical utility, considering the value of German for serious students in all branches of knowledge, as well as for those taking up a professional, commercial, or technological career.

(*d*) From the point of view of rendering a good understanding between the two peoples less easy.

Taking this view of the important place German should hold in the curriculum of the secondary school, we welcome the recent change in the Regulations of your Board, the effect of which we understand to be that so long as provision is made for teaching Latin to pupils who may require it, the Board will offer no objection to a school making French and German the two principal foreign languages in its curriculum.

We would at the same time represent to you that much more must be done if the unfortunate decay of German is to be checked, and we therefore venture to suggest that your Board should consider the desirability of calling the attention of educational authorities, governing bodies, and the principals of secondary schools to the steady decline in the study of German, and should, by means of a circular, as in the case of Latin, or such other method as may be thought fit, submit to those authorities and to the public generally the many weighty and urgent reasons for regarding an acquaintance with German as being of the first importance to great numbers of young men and women, and a widespread knowledge of the language a national necessity.

We would urge, moreover, that the Board should encourage and foster schools of the type of the German Realschule and Oberrealschule, in which two modern languages, but not Latin, are taught. The latter of these in Prussia ranks in standing with the Gymnasium and its leaving certificate confers the same rights. Of schools devoting special attention to modern, as against classical, languages, there are at present in this country very few.

Lastly, we would suggest that it should, as a genera rule, be required that schools should make provision for the teaching of German to those pupils who wish to learn it, as it is now required that provision should be made for the teaching of Latin.

In conclusion, we desire to point out:

(*a*) That the study of English is encouraged in German schools of every type.

(*b*) That England seems to be the only country of importance where the study of German is neglected. In the United States, France, and Scandinavia especially, great weight is attached to the teaching of this language.

Signed on behalf of the Modern Language Association by A. A. Somerville (chairman of committees), E. L. Milner-Barry (vice-chairman of committees), A. T. Pollard, F. Storr, and H. Weston Eve.

Signed on behalf of the London Chamber of Commerce Education Committee by Albert K. Rollit, chairman, ex-President London Chamber of Commerce, and Augustus Kahn.

Signed on behalf of the Society of University Teachers of German by Karl Breul, H. G. Fiedler, A. W. Schuddekopf, and J. G. Robertson.

Signed on behalf of the Teachers' Guild by Walter Rippmann and T. Gregory Foster, Provost, University College, London.

Signed on behalf of the British Science Guild by Norman Lockyer, chairman of committees.

HISTORY AND CURRENT EVENTS.

"FREEDOM of speech in the Houses of Parliament, provided that it does not become licence—which is wholly different—is what has made our Parliament the greatest Parliament in the world." So the Speaker of the House of Commons is reported as saying last September on the occasion of his receiving the freedom of Carlisle. But, Mr. Speaker, what is this licence which is so wholly different from freedom? What are the bounds of it? When does liberty become "licence"? Are you of the same opinion on this matter as Queen Elizabeth, who told your predecessor in 1593 that liberty of speech was granted, "but not to speak every one what he listeth or what cometh into his brain to utter. Their privilege was, aye or no. Wherefore, Mr. Speaker," continued the Queen's spokesman, "her Majesty's pleasure is that if you perceive any idle heads . . . which will meddle with reforming the Church and transforming the Commonwealth, and do exhibit any bills to such purpose, that you receive them not until they be viewed and considered by those who it is fitter should consider of such things and can better judge of them." And do you, Mr. Speaker, agree with Charles I. or with Eliot as to "licence" in 1629?

CELEBRATIONS of historic events are becoming quite common nowadays. Prussia is celebrating the centenary of the "gift" of municipal self-government, which was

part of her re-birth after her overthrow by Napoleon, and Philadelphia has been celebrating the 225th anniversary of her foundation by William Penn. What would the good old Quaker have thought of his city of "Brotherly Love" nowadays, or of the method in which the citizens are recalling his memory? He would be mildly astonished at the pealing of bells from the "steeple houses" of the city which answered "the historic bell of old Independence Hall." He might be interested in the pageant symbolising the city's industrial growth and the signing of the Declaration of Independence. But what would the Admiral's son say to the salutes from the war-vessels lying in the Delaware River, and the military parade of 25,000 troops and militia? The ideals of both father and son have triumphed. We have both peace and war.

IN an article which we were reading lately on South African problems, the author makes an allusion to "the electoral methods and social conditions of the South American States." It is but an allusion, not fully explained, but, as he is considering the question of the natives of South Africa, it seems almost certain that he is referring to the negro question. If so, which are the States to which he refers? Are they the States of South America or are they the southern States of the United States of America? When we hear a man say casually that he is going to "America," do we ever suppose it possible that he means "Canada"? Yet Canada and (say) Argentina are "America" quite as much as the republic which has taken that name for itself alone. It is a pity the word "America," which originated, by the bye, in a half-jest, should become ambiguous.

JOHN BUNYAN is to have a monument in Westminster Abbey. The Dean and Chapter have agreed, at the request of the Baptist World Alliance, to allow a window to be put in filled with scenes from the "Pilgrim's Progress." Westminster Abbey is, of course, our national Valhalla; but some may perhaps have a feeling of mild astonishment at finding the Dissenting brazier in a building of the Established Church. Therefore we think it worth while to point out that when in 1653 he became a member of a Congregational Church, he did, in fact, join what was then the Established Church in the parish of St. John's, Bedford. The minister of that church was John Gifford, who had just been presented by the Bedford Corporation with the rectory of St. John's. His successor was John Burton, who died just as Charles II. was returning to England, and when, therefore, John Bunyan was chosen as Burton's successor in 1660, he was a Dissenter in prison. If Oliver Cromwell had lived until (say) 1662, John Bunyan might have been rector of St. John's, and might have communicated on Church questions with the ministers of the Congregational Church, then using Westminster Abbey as their "meeting house."

ITEMS OF INTEREST.

GENERAL.

THE Headmasters' Conference will meet this year on December 22nd and 23rd at the Merchant Taylors' School.

THE second monthly meeting of the Geographical Association will be held on December 11th, at 8 p.m., at the South-Western Polytechnic Institute, Manresa Road, Chelsea, S.W. Papers will be read by Mr. Ernest Young, headmaster of the Lower School of John Lyon, Harrow, on the qualications of the teacher of geography, and by Mr. B. C. Wallis, L.C.C. Camden Secondary School, on practical geography for examination purposes. A discussion will follow. Non-members are invited to attend this meeting.

THE Government is making another attempt to settle the education "difficulty." As we go to press, Mr. Runciman's Bill is being discussed in the House of Commons. The spirit of compromise is abroad, and there appear to be substantial reasons for hope that the wide differences of opinion on the question of religious instruction may be laid to rest. A very real desire on the part of moderate persons has grown up to settle, in as satisfactory a way as possible, the divergent views on religious instruction which have barred the way to real educational progress for so many years. The Bill provides for the affording of facilities in provided schools for denominational instruction on two mornings in the week to those children whose parents desire them to receive it. Assistant teachers in all schools may volunteer to give religious instruction if they are permitted by the local education authority to do so. The conditions under which a school not provided by the local education authority may be recognised as a public elementary school, and thus share in the parliamentary grant, are laid down. The cost of denominational teaching must be borne by the Church concerned, but denominational schools may "contract out," or receive State aid, but not rate aid, on conditions duly specified. Of course, much opposition is being shown on all sides. The teachers of elementary schools themselves have, by the voice of the National Union of Teachers, protested against "contracting out," and reaffirmed other principles to which they attach great importance. Extremists among sections of the Church and Nonconformists alike appear irreconcilable. But there is still room for hope that moderate opinion on both sides is sufficiently powerful to make a greatly needed settlement possible.

AN enjoyable and successful gathering was held at the Charterhouse on the evening of November 10th, when the American and Canadian teachers now visiting this country were entertained at a reception given jointly by the Association of Assistant-masters and Assistant-mistresses. The company present, who were received by the chairman (Mr. R. F. Cholmeley, St. Paul's School) and the president (Miss Bancroft, Redland School, Bristol) of the two associations, included about a hundred of the Transatlantic guests, a large number of the officials and members of both associations, as well as the headmasters and headmistresses of many of the London public schools. Among others present were the Rev. Canon Bell, chairman of the Federal Council, and Mr. Alfred Mosely, C.M.G., by whom all the arrangements for the visit of the teachers have been made. The interesting and historic buildings of the Charterhouse were thrown open, and the old hall looked especially well when lighted and filled with guests. During the evening Mr. Harold Haig-Brown, who, as the son of a former Master of the Charterhouse, was exceptionally well fitted for the task, gave a short sketch of its history and associations; and Mr. Cholmeley in a few words welcomed the visitors and thanked Mr. Haig-Brown for his interesting address. Music and refreshments were provided, and the company lingered until a late hour exploring the hall, library, chapel, and other parts of the buildings, and exchanging experiences and views with their guests.

THE annual general meeting of the Association of Teachers in Technical Institutions was held at the St. Bride Institute, London, on November 7th. Mr. Harrap, president of the association, occupied the chair. In moving the adoption of the annual report, Mr. Harrap congratulated the members on the steady growth and development of the membership, work, and influence of

the association. Mr. J. Wilson, head of the Chemical Department, Battersea Polytechnic, who has acted as honorary secretary of the association since its formation in 1904, was elected the new president. Mr. P. Abbott, head of the Mathematical Department of the Regent Street Polytechnic, London, was appointed honorary secretary.

AT a meeting of the London branch of the association, held in the evening, a paper was read by Mr. W. J. Lineham on "Technical Education at the Franco-British Exhibition." Reference was made to the excellent exhibits of the work of trade schools, schools of arts and crafts, and the technical institutions. Clear evidence, Mr. Lineham said, was given in the exhibition of the great steps which have been taken in the direction of the co-ordination of education and "group" courses. The excellence of the machine-shop work in the French Section was pointed out. Regret was expressed that no steps have been taken by the Board of Education to retain the exhibits permanently. The hope is entertained that a similar educational exhibition may be held every five years as a guide and stimulus to all engaged in education.

IN a recent lecture before the Fabian Society, Prof. M. E. Sadler said that, under present conditions in England, the State should aim at (i) a reduction in the size of the large classes in many public elementary schools, in order that the teachers may be able to give more individual care to the different pupils; (ii) careful medical inspection, at frequent intervals, of all school children with the view of securing the due physical development of the rising generation, parental duty in the care of children being enforced stringently, with liberal aid in cases of need; (iii) generous provision of playgrounds under skilful supervision to encourage a healthy corporate life in all schools; (iv) raising, at dates to be fixed by Parliament, the present age of exemption from school attendance (with a possible reservation of the agricultural districts), first to thirteen and then to fourteen years of age; (v) the abolition by statute of the half-time system in the textile districts; (vi) the provision of educational care for young people during the critical years of adolescence; (vii) the laying upon all employers of a statutory obligation to enable their younger workpeople, up to seventeen years of age, to attend courses of suitable instruction, provided or approved by the local authority of the district, and held at a time of day which would prevent those attending the classes from suffering from overstrain of body or of mind.

THE Board of Education has published (Cd. 4374) a list of secondary schools in England recognised as efficient with a list of recognised pupil-teacher centres. The list is exhaustive only so far as schools in receipt of grants from the Board are concerned; it also includes other schools which have been ascertained by inspection to be efficient, but are not in receipt of grants, either because they are conducted for private profit, or because, although of a public character, they have already sufficient funds. The list will prove of assistance to parents selecting schools for their children, since at present they have very imperfect means of knowing what efficient schools are available in the area in which they live.

THE question as to what precisely should be the character of the science instruction in girls' schools has been receiving great attention in recent years. A number of experiments have been made with a view to inculcate the scientific habit of mind by a study of those parts of physics and chemistry which have a direct bearing on household economy. Great progress has been made, and it will prove possible eventually to teach girls to reason accurately, to observe carefully, to use their hands with dexterity, and at the same time to give them a rational knowledge of the domestic arts on which the comfort of the home depends. Teachers who are working in this direction should study the paper read recently to the members of the Teachers' Guild by Mr. John Wilson, the president of the Association of Teachers in Technical Institutions, on how science can be connected with domestic training. The results of his ten years' experience in teaching the chemistry of cookery, laundry work, and kindred subjects will prove of very real assistance to them in their lessons. The paper was printed in the issue of *Education* for November 6th last.

WE understand that Merthyr Tydfil, the newly formed county borough in Wales, is to build a free secondary school for 500 pupils. The Regulations for Secondary Schools issued by the Board of Education make this course possible, since it is there stated that a recognised school may be with or without fees. The authorities at Merthyr Tydfil may have logic on their side, but we cannot help thinking that there is grave danger that parents may value lightly an education to the cost of which they make no direct contribution. But the experiment is full of interest, and we shall watch its progress carefully as a means of indicating how far the fee paid by parents influences their attitude towards secondary education.

THE sixty-ninth report of the council of the Union of Lancashire and Cheshire Institutes, dealing with the present year, shows that the number of higher education committees and separate institutions in association with the union is 196, and, including the townships in the rural areas of Lancashire and the urban council districts and townships in Cheshire, represents a total of 412. The membership is more than 167,200, with upwards of 145,100 individual students under instruction at evening classes. There are in these institutions 6,800 day students. Of the students in attendance at evening classes, 31,300 study science and 8,700 study art in connection with the Board of Education and the City and Guilds of London Institute, while 109,200 attend commercial and other classes.

THE total attendance at the Teachers' Guild Modern Languages Holiday Courses in 1908 was 112, viz., at Tours, 24; at Honfleur, 56; at Neuwied, 26; and at Santander, 6. This was a smaller total than in 1907, owing to a considerable reduction of entries at Tours and Neuwied, not entirely counterbalanced by the increased numbers at Honfleur and Santander. Of the students 44 were men and 68 women. The courses will be repeated in the same four centres in August, 1909. A new course, which will be of a specially practical and commercial character, will also be started at Lübeck, under the local guidance of Dr. Sebald Schwarz, director of the Realschule. Mr. T. R. Dawes, headmaster of Castleford Secondary School, Yorks, will be the representative of the English committee.

THE Training Department of the Bedford College for Women, London, is recognised as a training college by the University of London and the Cambridge Teachers' Training Syndicate. Miss Mary Morton is the head of the department. Students who are registered as internal students of the University of London attend lectures given by the professor of education of the University of London, in addition to the lectures given by the staff of Bedford College. Classes are also held for blackboard drawing and other practical work. Criticism lessons are given, followed by discussion. Students have frequent opportunity of hearing lessons given by the staff of the department and by the staffs of the schools where they practise. They also

visit and report upon schools other than those in which the practical work is done. The practical work is carried on in schools of various types, including six secondary schools and two public elementary schools. Each student gives at least two fully criticised lessons a week. Certain scholarships are to be awarded in the department for the session beginning January, 1909, and for that beginning October, 1909, viz.: (i) a free place (value £26 5s.); (ii) one scholarship of £20; (iii) a limited number of bursaries of £10 each. The scholarships will be awarded to the best candidates holding a degree, or equivalent, in arts or science.

THE League of the Empire announces, in connection with the Lord Meath Empire Day challenge cups and prizes, the conditions of the essay competition for Empire Day, 1909. In the competition for secondary schools throughout the Empire the subject for essays is: "Here and here has England helped me; how can I help England, say!" (Browning). A silver challenge cup, value £10 10s., presented by the Earl of Meath, to be held by the school, and a personal prize of £5 5s., given by the League of the Empire, will be awarded. The essay is not to exceed 2,000 words, and the age limit is fourteen to eighteen years old. The essays entered for the final judging in London must reach the central office by March 1st next. Further particulars may be obtained from the League of the Empire, Caxton Hall, Westminster.

THE third International Congress of School Hygiene will be held in Paris from March 28th to April 2nd, 1910. An exhibition will be arranged of objects and apparatus of interest to students of school hygiene. Information concerning the congress may be obtained from M. Dinet, 11 bis, rue Cernuschi, Paris; and particulars of the exhibition from M. Friedel, at the Musée pédagogique, 41, rue Gay-Lussac, Paris.

THE *Education Gazette*, issued by the Department of Education in Cape Town, of October 8th last, gives some striking information as to how much each of the South African Governments is expending on education. The following table from our contemporary is based on the annual reports for 1907:

Colony	Total Govt. Expenditure	Pupils Enrolled White	Coloured	Total Enrolment
Cape	£537,836 ...	78,755 ...	99,361 ...	178,116
Transvaal ...	£400,999 ...	38,026 ...	11,847 ...	49,873
O.R.C.	£117,345 ...	17,201 ...	8,933 ...	26,134
Natal	£102,033 ...	12,504 ...	16,343 ...	28,847
Rhodesia ...	£5,541 ...	801 ...	...	801
S.A., excluding Cape Colony.	£625,918 ...	68,531 ...	37,123 ...	106,655
Total for British S.A. ...	...£1,163,754 ...	147,286 ...	136,484 ...	283,771

* Three native schools in operation; enrolment not given.

It will be noticed that more than half the white children and nearly three-quarters of all the coloured are in Cape Colony.

IN Cape Colony, we learn from the same source, that in the year 1907 the sources of income in the case of schools under school boards were as follows: State, 51·05 per cent.; parents, 36·22 per cent.; local rate, 9·42 per cent.; other, 3·31 per cent. Under the provisions of the Act passed in the recent session of Parliament, however, the whole of the deficit arising after taking into account school fees and Government grants is to be met by means of a local rate, which in some districts will take the form of a house tax and in others will be a charge on the landed proprietor. Under the new Act the local rate will need to produce just about twice as much, and there will accordingly be a change in the percentages for 1908.

THE seventh annual meeting of the North of England Education Conference is to be held in Manchester on January 7th, 8th, and 9th, 1909. The presidential address is to be delivered on the second day by the Dean of Manchester, Dr. Welldon. United conferences will be held during the mornings of January 8th and 9th at the Manchester Town Hall, the subjects being the incidence of the cost of education, to be opened by Lord Stanley of Alderley, and Messrs. W. Oulton, A. R. Pickles, and J. Graham; and the co-ordination of the curricula of primary and secondary schools, opened by papers by Messrs. J. L. Paton and J. W. Iliffe and Miss Cleghorn. Sectional meetings will be held at the Municipal School of Technology. The following subjects are to be dealt with: The Supply of Teachers, papers by Mr. Ernest Gray and Miss S. J. Hale; the Teaching of Languages, papers by Prof. E. A. Sonnenschein and Mr. Hardress O'Grady; the Training of Girls in Domestic Subjects, papers by Miss Alice Ravenhill and Miss E. J. Ross; the Place of the Higher Elementary School in the Scheme of Education, papers by Mr. C. H. Wyatt and Prof. J. J. Findlay; the Relation of the Universities to Evening Teaching in Industrial Centres, papers by Messrs. R. H. Tawney and W. J. Bees; and Methods of Teaching Mathematics, papers by Messrs. T. J. Garstang and H. Brotherton. Admission is by ticket, and applications should be made to the honorary secretaries, Municipal School of Technology, Manchester, enclosing one shilling as a membership subscription.

THE Rev. Charles H. T. Wood, assistant-master and chaplain at Marlborough College, has been elected headmaster of Sherborne School to succeed Canon Westcott, who will retire at Christmas.

SCOTTISH.

THE General Council of Glasgow University had under consideration at its last meeting a report of a committee on the advisability of instituting an order of lectureship similar to that of the *Privat dozenten* in the German universities. The report gives figures to prove what an important part the *Privat dozent* plays in the teaching power of the latter universities. The want of a satisfactory tutorial system has always been a weakness in the Scottish universities, and the poverty of their resources makes it difficult, if not impossible, to set up tutorships on anything like an adequate scale. The *Privat dozent* receives no salary from the university, and is altogether dependent on the fees of the students whom he attracts to his lectures. The system is thus peculiarly well adapted for introduction in the Scottish universities. The chief drawback to this is the compulsory attendance at qualifying courses required of all students working for a degree. These courses are in every case those of recognised professors and lecturers, and to accept the classes of the *Privat dozenten* as equivalents would, it is contended, tend to an undignified scramble for students among the various parties. But, notwithstanding the difficulties in the way, the General Council decided that the system contained the promise of much advantage to the University, and remitted the question back to the committee to consider what modifications were required to suit it to Scottish conditions.

THE old reproach against the Scottish universities, that they almost entirely ignored the social life of the students, must soon be a thing of the past. Of course, so long as there is no residential qualification required of students, it cannot be expected that the social element will prove such an important feature as in the great English universities,

but within the limits imposed by their constitution the Scottish universities have been doing everything in their power to promote the social well-being of their students. Clubs, societies, and associations appealing to every variety of taste and interest have sprung up within recent years, and are heartily supported by students and professors. The institution of a Students' Union, or central social club, has been largely responsible for these developments. These buildings, managed and controlled by the students themselves, gave them opportunity for meeting together, while at the same time they afforded "a local habitation" to the various clubs and societies. Lord Newlands, in opening an addition to the Students' Union in Glasgow University, dwelt upon the importance of such an institution, and said that the influence exercised by the social life of the University was likely to prove as lasting and far-reaching as any gained within the walls of the class-rooms and lecture halls.

THE report of the Edinburgh Provincial Committee for the Training of Teachers during the years 1907–8 has just been issued, and the director of studies, Mr. King, must be congratulated on the clear and interesting manner in which he has set forth the nature and scope of the committee's operations in different fields. At the Edinburgh centre there are altogether 766 students in training, and of these 375 were in attendance at the University. Notwithstanding the demands on the time and energy of the students necessitated by this continuation of professional and academic training, it is satisfactory to find that no case of over-pressure had come under the notice of the authorities. It is rather alarming to find so few students coming forward to take the course provided for intending secondary-school teachers. Only three students attended the winter course, and the same number came forward for the summer course. At the present time the demand for teachers of higher subjects largely exceeds the supply, and the outlook for the future is serious if the springs of supply continue so low.

THE report stage of the Education (Scotland) Bill revealed quite an unexpected amount of opposition to certain clauses. It was anticipated confidently that one sitting would suffice for both the report and third-reading stage. Instead of that, a ten hours' session served to pass only nine out of the twenty-nine clauses of the Bill. The discussion centred largely round the treatment of the voluntary schools. These have hitherto been in such a small minority that they have found few champions of their cause, but the concessions to voluntary schools in England have emboldened their brethren across the borders to fight for better terms. The Secretary for Scotland refused to give way, and the discussion might have gone on interminably had the closure not been applied. Another set of objectors found a text in the increased powers conferred upon the Department, which, they declared, threatened to reduce the local authorities to mere automata. The prospects of the Bill are certainly not improved by the success of the obstructive tactics pursued by its enemies and so-called friends, but it is inconceivable that the Government would allow another failure to be recorded against it in the sphere of education. The Bill has many excellent features, and these should be pushed through even at the expense of jettisoning some of the controversial clauses.

PROF. CHRYSTAL, in welcoming the students under the Edinburgh Provincial Committee to an "At Home" in the McEwan Hall, said that there never was a time when the prospects of teachers in this country were brighter than at present. It has become recognised that the schoolmaster is a potent instrument for furthering the moral and spiritual, as well as the intellectual, welfare of the youth of the nation. As Dean of the Faculty of Arts in Edinburgh University, Prof. Chrystal said that he was intimately acquainted with the work done by all the students, and he paid a high tribute to the quality of the provincial students' work. These form 37 per cent. of all students in the Arts Faculty, and no fewer than 10 per cent took first-class honours and 20 per cent. second-class honours in their classes last year.

FOR many years past there have existed in Scotland two separate associations dealing with the work of secondary education. These appealed originally to a somewhat different constituency, but recent educational changes have removed all grounds for maintaining separate organisations. The members of the two associations have recognised, very wisely, that their influence with the public and the Education Department has been prejudiced by their division, and at a meeting last month delegates from the two associations met for the purpose of drawing up a constitution for a united association. Some difficulty was experienced in finding a suitable name for the new body, but it was finally agreed that it should be "The Secondary Education Association of Scotland." Complaints are heard frequently from teachers of the multiplicity of associations, and it is gratifying to be able to chronicle a movement in the opposite direction. The teaching profession will fail to make its due influence felt in educational politics until all grades and sections are united in one powerful body such as the National Education Association of America.

IRISH.

As anticipated in our last issue, the Intermediate Education Board has withdrawn Rule 14 (*b*), which prevented any student who had already passed the examinations from entering in 1909 in the same grade as this year. The formal withdrawal was not made until November 3rd, and the rule now runs so that a student cannot enter again a second time in the preparatory grade nor in any other grade in which he has passed twice or obtained a first-class exhibition, nor will he be allowed to enter a second time in any grade in which he passes after the present date. In other words, the minimum of concession is made, and the working of the new principle is only postponed in the higher grades until after next summer. On the theory that half a loaf is better than no bread, Irish schools accept the modification thankfully; but the principle itself is new, and is in direct contradiction to the recommendations of the Vice-Regal Commission of which the present chairman of the Intermediate Board was the president. It recommended that students should be allowed to pass twice in any grade if they wished, and this recommendation was accepted and acted upon; now, without any discussion, it is withdrawn, and what was by general consent an excellent reform is apparently to be abrogated after next summer. Perhaps the Commissioners may reconsider the matter.

ANOTHER most important announcement is made by the Intermediate Board which is likely to modify the whole state of secondary education in Ireland, viz., that arrangements have been made with the Treasury for the appointment of permanent inspectors. We understand that this will take place in the course of the present educational

year, and that inspection will be in full swing this time twelvemonth. It is desirable that the Board should act in full harmony with the schools in deciding on the duties of the inspectors and the scope of their functions.

The Protestant Schoolmasters' Association at its annual meeting this autumn considered the advisability of disbanding the joint committee, inasmuch as the Intermediate Commissioners refused to meet it, but eventually decided to continue it as the best means of keeping in touch with the Catholic Headmasters' Association. The association had under discussion other minor matters in connection with intermediate education, such as Rule 36, by which girls can pass the examinations on three honour papers besides English, the question of a pass in two languages being necessary, the alteration of the history and geography courses, the definition of an intermediate school, and the encouragement of trigonometry. No definite action was taken on these points, as owing to the unsympathetic attitude of the Board suggestions were felt to be useless, and the meeting passed to the question of teaching Esperanto and patriotism.

The Roman Catholic Headmasters' Association met a few days later. It decided to oppose any alienation of intermediate funds which had hitherto been spent as school grants, to ask for the restoration of the rule permitting a pass on the average mark as in previous years, and the abolition of the special papers with an increase in the time allowed for the honour papers; also the abolition of the division of the literary course into two sections, a modification of the new geography courses, the introduction of manual instruction as a pass subject for boys, the recognition of the grammatical reforms authorised by the French Minister of Instruction in 1901, and an entire change in the programme of music.

The Department of Agriculture and Technical Instruction announces that it will offer for competition next June and July three teacherships-in-training, tenable for one year and renewable for a second, at the Metropolitan School of Art, Dublin; also a limited number of science and technological scholarships and teacherships-in-training, tenable for three years, so as to cover the full associate course, at the Royal College of Science, Dublin. The competition for the latter will be limited to mathematics, experimental science, and drawing, with a qualifying examination in English and one other language. Full details of these competitions may be obtained from the secretary of the Department.

Little progress has been made as yet towards the initiation of the new universities beyond appointing chairmen for the Statutory Commissions in Belfast and Dublin. The last, or probably the last, annual gathering for the distribution of degrees was held this autumn in the great hall of the Royal University. Nothing could be heard of the proceedings owing to the noise created by the students, but the address of Lord Castletown, the Chancellor, was printed in the papers next day. After congratulating the country on the passing of the Universities Bill, he pointed out that the Royal had up to the end continued to do a great work, which showed increase even in its last year. In 1907 the number of students entering for its examinations was 4,115, and in 1908, 4,136; in 1907 the degrees conferred numbered 243, and in 1908, 341. The name to be given to the new university in Dublin, he stated, was "The National University," and, in conclusion, appealed to Irishmen to aid generously in the endowment of bursaries, scholarships, and fellowships.

WELSH.

Degree Day of the University of Wales was marked this year by the conferment of the honorary degree of LL.D. on the Chancellor of the Exchequer, Mr. Lloyd George. Mr. Lloyd George, at a banquet in the evening, told once more the story of recent Welsh education. "Forty years ago," he said, "we had no University of Wales. We had very few secondary schools, and most of them were barred to the bulk of the people by reason of the great expense in the matter of fees. Now we have ninety-eight such schools, all of them accessible to the sons and daughters of the people. There are 13,000 pupils at these schools, four-fifths of whom have come from the elementary schools. In 1872 Sir Hugh Owen and others started the University College at Aberystwyth. The students they had numbered ninety-three, but the number fell down to fifty-three, and it looked at one time as if the whole thing would end in dismal failure. But, instead of fifty-three students, we now have three colleges and not far from 1,500 students. The whole story of the building up of this system is a romance."

Other points of Mr. Lloyd George's address are worth repeating for the English reader, though they are commonplaces to the Welsh. First, in the sacrifices made by the people for the sake, not only of elementary and secondary education, but also for the colleges, the efforts made in themselves constitute, as Mr. Lloyd George put it, "a system of national education." For it is not merely that Wales has contributed so large an amount of money for the building of the three colleges, but the fact (again to quote Mr. Lloyd George) that "there are few households in Wales which have not contributed at least a brick to the buildings of the colleges"; and, secondly, "I do not believe there is a parish in Wales where you have not got a lad who has been to a university college, or who is going there, or who is there. There is not a parish in Wales, I venture to say, which has not some lad at the college and that lad is the son of parents not richer than their neighbours."

The Chancellor of the Exchequer had further encouragement to offer the Welsh colleges. "We have had," he said, "a Treasury committee sitting to consider the needs of the Welsh colleges. They were a very able committee, and I think it will be recognised that they were one of the best committees that ever investigated a matter of that character, and it has reported. They think very highly of the Welsh colleges. They really marvel at what has been accomplished with the means at their disposal, and they show how more could be done by these colleges if they had more money." Accordingly, Mr. Lloyd George announced that it was decided to make a "very substantial contribution to the funds," and indicated that, in his opinion, founded on the report of the committee, help should be given from the Treasury, to increase the salaries of the staffs, to aid in research work, as well as in other directions.

The Federation of the National Union of Teachers' Associations in Wales and Monmouthshire has unanimously resolved that the attention of the Welsh members of Parliament and others interested in education should be directed to the *inadequate provision made for elementary education and art and technical instruction* in the principality. The Federation also regards the attitude of certain of the Welsh education authorities as distinctly unsympathetic towards primary education, and insists on the following points: (i) the engagement of an increasing proportion of fully qualified teachers; (ii) the adoption of reasonable scales

of salaries applicable to both provided and non-provided schools. It is quite clear that, however much praise is bestowed on the Welsh colleges and on intermediate education, real educational success will be dependent on proportionately liberal treatment of the elementary schools, in which, in the first instance, as Mr. Lloyd George says in the paragraph above, four-fifths of the pupils of intermediate schools received their early training.

THE eleventh annual report of the Central Welsh Board has just been issued. The total number of pupils in the schools for 1907 was 12,499, of whom 6,029 were boys and 6,470 girls. The total number of pupils for 1906 was 11,577, and for 1905, 10,413. The staffs of the schools comprise 666 teachers, of whom 485 hold a degree or an equivalent certificate. In the schools there are altogether 39 trained certificated teachers, 96 certificated teachers, 50 teachers who hold the Cambridge University diploma, 3 teachers who hold the London University diploma, and 115 teachers who hold teachers' diplomas or certificates from various other sources. The average salary paid to assistant-masters is £138 4*s.* 7*d.*; the average salary paid to assistant-mistresses is £112 3*s.* 9*d.* As to staffing, the following particulars are interesting. In 1904 the proportion of teachers to pupils was 10:172; in 1905 it was 10:178; in 1906 it was 10:186; and in 1907 it was 10:187.

RECENT SCHOOL BOOKS AND APPARATUS.

Modern Languages.

Am Rhein. A German Story for Beginners. By K. Wichmann. xii+144 pp. (Sonnenschein.) 2*s.*—The recently appointed Professor of German at Birmingham has written a very nice little book for beginners, in which he shows considerable skill as a teacher. Probably he has in mind beginners of fifteen or sixteen, for the progress is rather rapid, and the vocabulary large. The views expressed in the preface are sound. It is interesting to note that the passages for translation from the mother tongue have been added by him against his own conviction that "the practice of translating from English into German is undesirable in the first stage of learning." The text gives an account of a boy's visit to his uncle, a clergyman; the greater part of it is, however, taken up with a modern version of the Nibelungen story. The language of Pfarrer Neumann and the children strikes us as occasionally a little stilted or flowery; but on the whole the aims of giving a readable text and introducing at the same time various grammatical features have been attained. The grammar and exercises are distinctly good. The remarks on pronunciation, however, are not altogether satisfactory; thus, to say that the sound of *ö* when short is "somewhat like *u* in *hub*" is of no value, and to suggest that the *ch* sound of *ich* is equivalent to the first sound in *hew* is simply wrong. The English outlines of exercises for free composition are a good idea, if the teacher will insist on their being regarded merely as such, and not used for word for word translation.

H. Levi, Easy German Stories. Edited by Mrs. L. Delp. 98 pp. (Harrap.) 1*s.* 3*d.*—Ten stories, originally written for girls' magazines, have been carefully edited, and form an attractive reading book for quite young beginners who are not being taught on reform lines. The notes contain English renderings of words and phrases, few of which present any great difficulty, and grammatical notes which the teacher should supply at his discretion. There is also a vocabulary.

A. Gryphius, Absurda Comica oder Herr Peter Squenz. Edited by S. H. Moore. vii+85 pp. (Arnold.) 2*s.*—Of all the unhappy inspirations in the choice of books for school reading, this is surely the unhappiest; and the editorial work is of poor quality. The introduction is not scholarly, and it is rather pretentious. The text has been somewhat modified, but by no means enough to make it suitable for "use in many schools." Seventeenth-century forms and Latinisms abound; anything better calculated to harm a pupil's vocabulary cannot well be imagined. If the notes in each case gave good modern German equivalents, the comparison might be valuable; but many obsolete words and phrases are left unexplained. On every page we have underlined words which in our opinion require a note; the editor evidently thought otherwise. To criticise in detail the notes would serve little purpose, for we believe that this ill-advised production is, to use one of the editor's phrases, "dead as a doornail." This is all the more regrettable, as Gryphius was a great man, and deserves worthier treatment.

Dent's Andersen in German. Edited by Walter Rippmann. With illustrations by Thomas, Charles, and William Robinson. 108 pp. (Dent.) 1*s.* 4*d.*—To the seven tales occupying the first ninety-two pages of this book are appended copious reform exercises on subject-matter, vocabulary, and grammar. The reader has been edited with Prof. Rippmann's usual excellent taste and judgment, and the illustrations are full of life and expression.

Esperanto for the English. By A. Franks. vi+122 pp. (Milner.) 6*d.* net.—This is a very well written introduction to Esperanto, likely to be particularly helpful to those not familiar with foreign languages. The exercises and notes are quite satisfactory; but it seems a pity that there is not more continuous prose. The phonetician will notice with interest that variations in pronunciation are sanctioned, and that differences in the value of some of the vowels seem to be due to English habits of pronunciation. One would have thought that uniformity would be better in a world language, and that writers of text-books should do their best to secure it.

Classics.

A Latin Reader (Verse and Prose). By W. K. Gillies and H. J. Anderson. xiv+212 pp. (Bell.) 2*s.*—This book is nicely printed and contains a number of interesting passages of moderate length. Beginning with proverbs, mottoes, and epitaphs, it adds a number of unhackneyed extracts: Augustus to his soul, passages from the Appendix Vergiliana, Aquilius, Claudian, Rutilius, and others whose names are not indicated; some excellent modern songs, such as "Horatius," Walter Map's "Mihi est propositum," and famous hymns. The prose section contains pieces from the Latin Bible, and some late authors. These pieces are most welcome. The rest of the book contains pieces from the classical authors. The extracts are not scrappy, but each a whole in itself. There are a few notes and a vocabulary. We can recommend this book.

Selections from Erasmus, principally from his Epistles. By P. S. Allen. 160 pp. (Clarendon Press.) 3*s.* 6*d.*—Mr. Allen has already begun a critical edition of Erasmus's "Epistles," and the happy thought struck him to publish this book of extracts from them. They are indeed welcome, not only as specimens of very excellent good Latin, but as stories. Thus we have humorous pictures of an ordination examination, a battle royal between

mistress and maid, a winter journey, an English country house, a visit to Court, scenes at Oxford, including the famous dinner when Erasmus invented a story of Cain, a journey to Paris, Sir Thomas More—but we shall never have done: this is not half the good fare that Mr. Allen offers us. The scenes are as vivid as if they happened before our eyes. There are admirable pictures of Erasmus, Warham, Colet, and More. An introduction and a few necessary notes are added. The spelling and syntax has been normalised where necessary. This will be an excellent Reader for a fifth or sixth form.

Select Epigrams of Martial: Spectaculorum Liber and Books I.–VI. Edited from the text of Prof. Lindsay by R. T. Bridge and E. D. C. Lake. xxxvi+140 pp.; text unpaged. (Clarendon Press.) 3s. 6d. Notes separately, 2s. —We have already noticed the present editors' edition of Books VII.–XII. The present is of the same character. The introduction deals with Martial's life, the Epigram, and certain aspects of ancient life that are assumed in the text: patron and client, captator and orbus, recitations, books, the public spectacles; a chronology of Martial's works, and particularly of the present selection, metre, and text. Why does the chapter on Spectacles come after the metre and text, instead of being with the other chapters on aspects of ancient life? The text is that of Lindsay's school edition. Notes are needed for Martial more than for most authors; and these are good. The chief fault we have to find is that the summary of each epigram, giving its point, should be left for the reader to make out for himself.

The Horace Pocket Book: Praccepta Horatiana. Arranged by S. E. Winbolt, with an Introduction by T. E. Page. xl+160 pp. (Constable.) 2s. net.—Everyone loves Horace, for his wit, his good humour, his sincerity, and, says Mr. Page, for his wisdom: sound sense, not perhaps the wisdom of Plato, but what is very useful to the ordinary man. When he is raised out of himself, his patriotism raises him: a useful antidote to the sentimental cant of the present day. Here we find all our old favourite quotations, Latin on one side and English on the other. May this book find a resting-place in the pockets of the "good business man," the stockbroker, the hustler, and remind him that all life is not to get *rem, quocumque modo rem*; may it recall the Latin tongue to the House of Commons, where Horace used so often to speak; may it help many a man to rub up his scholarship, and to steal a few moments from the battle of life in thinking of the great past.

English.

Evangeline, The Lady of the Lake, and Milton's *Earlier Poems* are now issued in pocket form (cloth, 6d. each) by Mr. Heinemann, and go along with the well-known Shakespeare from the same publisher; but why are the edges not rounded? *Heroes and Hero Worship* (2s.), edited by Mr. Twentyman, comes from Mr. D. Nutt, and a less-known work, *The Head of the Family*, from Messrs. Macmillan. This last (440 pages, and in cloth) costs but a shilling: probably it will be welcomed by those who know *John Halifax*, and would re-read Mrs. Craik's works. *Olive, The Ogilvies*, and *Agatha's Husband* are published in the same form. While these well-known novels come out, we wait patiently for a *Phineas Finn* at a normal price. Messrs. Nelson send *The Enchanted Garden*, part v. of the Royal Treasury of Story and Song (1s. 6d.). The series has been highly praised in these columns. The book, for its matter and illustrations, is quite remarkable. Messrs. Horace Marshall and Son send *Poems of the Seasons*, in three parts, for junior schools. They are cheap (paper cover, 3d. each), and are *sui generis*. The anthologist has boldly, but quite naturally and well, put some of her own and her sister's work in among the acknowledged classics; the range of the classics is wide. It would be interesting to get childrens' votes in regard to the quite new-style anthologies which we have sometimes to notice (*e.g.*, a *Book of Verses*, by L. C. Smith, and Mrs. P. A. Barnett's *Golden Numbers*). Do children like the "classic" pieces; and, if so, ought they to like them? Is there not a great deal to say for the editor who goes far afield?

One of the most remarkable additions to the bookshelf is Mr. Murray's *Lavengro, Romano Lavolil,* and *Gipsies in Spain*, a triple delight. *Lavengro* (1s., as the others are) is a reprint of the original issue; the only cheap reprint, we suppose, in existence, and all Borrow lovers will be glad to get the quaint word-book of Romany and the remarkable Zincali. You cannot get away from the charm of Borrow; every traveller might go to school to Borrow and Kinglake, simply for power of bringing things home. All the books are illustrated. Our old friends *Character* and *Self Help* (cloth, 2s. each, illustrated) also come from Mr. Murray: it is a good thing that there is a demand for Dr. Smiles. He has his detractors, who wax very wroth with anyone who dares to admire his books; perhaps the modern young generation would be none the worse for a little more character and self-help.

The last batch for us to notice is also remarkable. Clean, in grey and white, the King's Classics (now issued by Messrs. Chatto and Windus, and edited, at 1s. 6d., by Prof. Gollancz) are worthy of their name. We do find fault to this extent, that it seems impossible for any big series like this to be composed of gems and gems only: but surely (we appeal to book-lovers), out of the sixty volumes, ten and more do not deserve to be dubbed King's Classics; while, as the learned editor well knows, a great mass of fine work (now only to be obtained by the long pocket) is waiting to be reprinted. Our small grumble over, we gratefully welcome Daniel's *Delia* and Drayton's *Idea* (collections that surely throw some light on the obscure Shakespeare sonnet difficulty); *Pettie's Palace* (two volumes), quite unknown, we should suppose, even to the readers of *Euphues*; and the *Vita Nuova*, with the Italian and the English on opposite pages. The shape of the books, small 4to, is dainty, and they are notable successors to the *Cupid and Psyche* and the famous *Joscelin of Brakelond*, which formed earlier volumes. Most of the books have short introductions; but they are welcome for themselves alone. They are to be paralleled for scholarship and beauty by the Belles Lettres Series of Messrs. Heath: they adorn the shelf which is the poor man's chief treasure.

Everyone will welcome Sir E. Ray Lankester's essays, reproduced from the *Daily Telegraph*, and entitled *From an Easy Chair* (Constable, 1s.). It is a book *ad omnes de omnibus*, and its subjects range from giraffes to fleas, with diamonds thrown in by the way. It is all bright and wise.

Geography.

OF the making of books there is no end, and surely the pen of the modern geographer appears to be the pen of a ready writer. The following books are no more than a selection from the numerous "geographies" and "geographical aids" which have reached a patient reviewer in the last month or so. Space will only admit of but a brief notice of some of their salient features, with the

slightest possible indication here and there of a critical appreciation.

1 is one of the "University Tutorial Series," and is especially designed for London matriculation work. The headings of the sections are the headings of the matriculation syllabus of geography. After five introductory chapters dealing with mathematical and general physical geography, the book contains descriptions, *in decreasing detail* (matriculation masters will recognise the vague and unsatisfying formula) of the following regions: the British Isles, Europe, North America, and the other continents. The book is not well adapted for class work; there are too many names, and many paragraphs are simply glorified lists. But it is a good "cram" book, and as such justifies its existence. The authorities quoted are unimpeachable.

2, by the principal of the Secondary School and Pupil-teacher Centre at North Shields, has reached a third edition in less than two years, and may be said, therefore, to have met a want. It, too, is written with a special eye to such coping-stones of education as Matriculation, Preliminary Certificate, Teacher's Certificate, and Civil Service examinations. Its special characteristic is stress laid upon physical causes as leading to agricultural and industrial developments. Part i. of the book deals with the consideration of general principles, part ii. with the application of these principles to special localities. At any rate that appears to be the idea—quite the right idea, too—of the author. But even the good Homer nods occasionally, and Mr. Heaton does not always write up to his high standard. Moreover, there is far too much "railway" in the book.

3. This book, as the name implies, is a collection of notes for teachers. They are arranged in three columns: (i) heads of lessons, (ii) procedure, (iii) teaching hints. They would have been better had they been briefer, and less irritating had the author avoided the "tell-the-class" and "ask-the-class" style, which, we think, disfigures his notes. He is strong, generally, on the influence of physical conditions on the trade, occupations, characteristics, and history of the people; he is weak, particularly, on details, such as the Gulf Stream and the Thames.

4. We like these "Rational Geographies," written by the headmaster of the Lower School of John Lyon, Harrow (*v.* THE SCHOOL WORLD, April and May, 1908, for reviews of parts i. and ii.). They are specially designed to meet the requirements of the Board of Education's syllabus in geography for secondary schools. The two special features which we would especially commend are: (i) the absolute necessity entailed of using an atlas *with* the book (Mr. Young never lets the reader off here), and (ii) the numerous exercises which compel thought and reason.

5 has its good points, viz., clear diagrams and good relief maps. Its bad points, however, are sadly too numerous. There are whole pages of mere lists of names, and there is much inaccuracy. The Gulf Stream myth, for instance, is there in its primæval nudity. Africa still has the Kong Mountains; Brown and Hooker, as of old, lord it over the Canadian Rockies; Lagos poses as a separate colony; Cornwall heads the list of the world's tin-producers; and the Hwang-ho reverts to its antique spelling of Hoangho. The short "pronunciation" table at the end of the book contains several mistakes and some superfluities.

6 is certainly to be commended for its ideas and cheapness, but the whole thing has been much better done in Simmons and Richardson's well-known work on the same subject.

7 is interesting, not written down especially to the juniors, yet not too hard for them to understand, and contains lots of small, sketchy maps, which will encourage a teacher to use his blackboard. Its contents are in two divisions: (i) the main principles of geography, and (ii) the geography of the British Empire.

8 and 9 need no recommendation. Both are standard books, and deservedly so. No student of commercial geography should omit to read Dr. Scott Keltie's booklet, notwithstanding his well-known disclaimer of the epithet "commercial," and no teacher of any kind of geography can afford to be without—or, say, beyond the reach of—Dr. Mill's great work of reference. The latter is now published in parts (of which this, No. 9, is the first, though issued after the others), with the addition of numerous exercises and questions from recent examinations.

10. These two additions to Dent's series of "Mathematical and Scientific Text-books for Schools" are excellent reading. The author believes thoroughly in running history and geography as one subject, and emphasises both by precept and practice the necessity of teaching history on the basis of the physical map. And yet he is wide enough awake to warn enthusiasts that geography is not everything. The Greeks of old owed much to their climate and environment. We look in vain for the artistic and the beautiful in the modern Greek, though physical features remain unchanged. This strain of correlation between geography and history runs throughout the pages of these two books. The odd thing is that Mr. Dann should himself have provided his work with physical maps which are as ineffective as they are pretentious. Wales and Ireland in the one, the Danube and the Balkan Peninsula in the other book, are poor aids to a right understanding of his conclusions. They may be contrasted with the helpful simplicity of the orographical maps in the next book, No. 11.

11 is one of a well-known and deservedly praised series. Indeed, we know of no works that give a better bird's-eye view of the various continents than these. "Asia" is no whit inferior to its predecessors. Excellent illustrations—illustrations, that is, not merely pictures—searching questions and exercises, simple maps and interesting letterpress leave little room for adverse criticism. If one may carp at all it is at the "sketchiness" which is bound to appear at times in attempting to compass the largest continent in the pages of so small a book.

12 is the outcome of a course of lectures on commercial geography by the chief lecturer in commerce at the Muni-

1. "Text Book of Geography." By G. C. Fry. Maps and Diagrams. xx+406 pp. (Clive.) *4s. 6d.*

2. "A Scientific Geography." By Ellis W. Heaton. Book II., "British Isles." Third Edition. Maps and Diagrams. 137 pp. (Ralph, Holland.) *1s. 6d.*

3. "Notes of Lessons on Geography." By Lewis Marsh. Vol. i., "Elementary Notions," and "England and Wales." Map and Diagrams. 176 pp. (Pitman.) *3s.*

4. "A Rational Geography." By Ernest Young. Part iii., "Measurements, Projections, Geology, Flora and Fauna, Asia, Australasia." Maps and Diagrams. x+213 pp. (Philip.) *1s. 6d.*

5. "Complete Geography." Maps and Diagrams. 176 pp. (Edinburgh: Cormack.) *1s.*

6. "Primer of Practical Geography." By J. W. Henderson. Maps and Diagrams. 123 pp. (Glasgow: Gibson.) *1s. 4d.*

7. "A Junior Geography." By Charles Bird. Maps and Diagrams. 130 pp. (Whittaker.) *1s.*

8. "Applied Geography." By Dr. J. Scott Keltie. Second Edition. Maps. vi+199 pp. (Philip). *2s. 6d.*

9. "The International Geography." By Dr. H. R. Mill, &c. Preliminary Section, "Principles of Geography.' Maps and Diagrams. xiv+121 pp. (Macmillan.) *1s. 6d.*

10. "Historical Geography on a Regional Basis." By E. W. Dann. Vol. i., "British Isles"; vol. ii., "Europe." Maps. 182 and 215 pp. (Dent.) *2s. 6d.* each.

11. "Regional Geography." By J. B. Reynolds. "Asia." Maps, Diagrams, and Pictures. 128 pp. (Black.) *2s.*

12. "Commercial Geography of Ireland." By A. Williamson. Maps and Diagrams. xii+197 pp. (Dublin: Browne and Nolan.) *1s. 6d.*

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cipal Technical Institute, Belfast. He strikes the right note at the beginning, and sustains it—more or less—throughout, viz., physical geography leading to the production and distribution of commodities. His maps and diagrams are simple and convincing; his text is interesting. But why does he not read up some of the later authorities on the Gulf Stream?

13 is a "Reader," and appeals to those who prefer to teach geography per Readers. Its style may be judged from the titles of some of its chapters—"Sons and Sires of Seamen," "The Land of Opposites," "The Fight among the Fern Trees," "The Land of the Pharaohs." The advertisement claims, amongst other things, that (i) attention is directed to the effects of configuration on industry, and that (ii) by the introduction of orographical maps the pupil is assisted to understand his political geography. To which we have to say that we have not noticed much of the first point, and that as to the second our idea of an orographical map evidently differs from that of the writer of this book. The pictures are good, though of unequal merit. A dry list of bald and unconvincing detail at the end is termed a "Summary of Geography," and is quite superfluous. When will writers of "Readers" learn that this is the sort of work which can be better done by the readers than by the writers of books?

14 is another Reader, suitable for children of, say, from nine to eleven years of age. The author is a well-known Californian geographer, whose other books, "How we are Fed," "How we are Clothed," &c., have prepared us for the present volume. They have rather a tendency to recall the type of "object-lesson" Reader which was in vogue some years ago, and are somewhat obtrusively written down to youthful intelligences. Otherwise they are quite interesting, beautifully got-up, and satisfactorily illustrated.

15 is one of a series entitled "The 'A.L.' Masterpieces of Standard Literature." It gives, in Livingstone's own words, the chief incidents of his travels in South Africa between 1840 and 1856. This includes his discovery of the Zambesi, his wanderings to the west coast at Loanda and his return, his discovery of the Victoria Falls, and his journey down the river to Quilimane on the east coast. There are a few notes and a glossary at the end. It can be recommended for "silent" reading.

16 is really an explanatory memoir to a contoured relief-model of a portion of the north basin of the Clyde. The model itself costs 10*s*. 6*d*. plain, 15*s*. coloured, and has contours at each 250 ft. The treatment is wholly geological, but it is not without geographical interest, especially from the point of view of scenery and its dependence on rocks and their sculpture. A geological map with a scale of two miles to the inch is appended.

17 consists of eight really beautiful views from photographs printed separately on thin cardboard sheets, with descriptive letterpress at the back of each. The subjects are the volcanic masses of Ruapehu (2), Tongariro and Ngauruhoe (3), Ketetahi, the mud volcano at Waiotapu, and Mt. Egmont.

18 and 19 are editions of well-known school atlases, universally recommended both for cheapness and accuracy.

13. "Our Own and Other Lands." Maps and Pictures. 268 pp. (McDougall.) 1*s*. 6*d*.

14. "How we Travel." By J. F. Chamberlain. Map and Pictures. 227 pp. (Macmillan.) 2*s*. 6*d*.

15. "Travels in South Africa." By David Livingstone. Pictures. vii+163 pp. (Leeds: E. J. Arnold and Son.) 1*s*.

16. "A Hill Country." By R. F. Gwinnell. Map. vi+26 pp (Philip.) 1*s*.

17. "Geography of New Zealand." 8 pictures and letterpress issued by the Education Department, N.Z. Size 9 by 6 in.

18. "First Atlas of Elementary Geography." 25 plates. (Philip). 8*d*.

19. "The County Council School Atlas." 44 plates. (Philip). 1*s*.

The main *motif* is the special prominence of physical geography; the majority of the maps are, therefore, orographical, printed in the familiar green and brown of what is known as the "international" colouring. Children, with maps such as these soon discover the meanings of political frontiers and the causes of the growth of towns.

20 is a collection of nine maps showing the growth of London throughout successive centuries. Up to a recent date the maps had never been reproduced, and the originals were beyond the reach of all but the few. The collection is of absorbing interest: cf., for example, the map known as Faithorne's, showing London as it was before the Great Fire, with Ogilby's, which shows London rebuilt afterwards. Each map is fully described. This is pre-eminently a book for the school reference library.

21 and 22 speak for themselves. Geographical apparatus is often of prohibitive price. These are welcome exceptions to the rule. With the theodolites are issued pamphlets of instructions and exercises—how to find the latitude of a place from the sun, the height of a building, the breadth of a river, &c. The globes are small (diameter 4 in.), and are meant for use by the class, while the teacher demonstrates from a corresponding globe of larger size. The black and white "Slate" globe is especially effective. The teacher could demonstrate with it and leave his big globe alone. As it weighs under 3½ oz., his movements could be freedom personified. The large globe, with which it corresponds, costs £1 2*s*. 6*d*.

Mathematics.

The Analytical Geometry of the Conic Sections. By E. H. Askwith. xiv+443 pp. (Black.) 7*s*. 6*d*. net.—The chief characteristic of this text-book seems to us to be found in the very great care that has been taken to meet the difficulties that beset the beginner. Though the general arrangement and the discussion of particular topics have a certain freshness, yet the merit of the book does not lie in its originality, but in the extreme pains that have been bestowed on the presentation of familiar facts. The book contains a fairly complete account of the analytical geometry of conic sections, and it is written in a way that should make the study of the subject comparatively simple for the pupil who has a good command of algebra. The exercises are numerous, and admirably illustrate the various matters discussed in the text. We could wish that for the ordinary student there were less analysis and more geometry, or at any rate more discussion of the loci where these are not conic sections, so that the geometrical meaning of the equations should be more in evidence; but within the limits which the writer has set himself the book is a good piece of work.

Examples in Elementary Mechanics, Practical, Graphical, and Theoretical. By W. J. Dobbs. xii+344 pp. (Methuen.) 5*s*.—For teachers who wish to introduce their pupils to the study of mechanics on the lines of experiment, supplemented by theoretical discussions of a suitable kind, there is in this collection of examples ample material to enable them to make the trial. The experiments to be carried out do not demand costly or elaborate apparatus, and the exercises, numerical and theoretical, are sufficiently close to the experiments to provide them with a definite meaning.

20. "Maps of Old London." Edited by G. E. Mitton. Letterpress of 27 pages; 9 maps. (Black.) 5*s*.

21. "Theodolites." (Glasgow: Baird and Tatlock.) From £1 11*s*. 6*d*. to £3.

22. "'Graphic' Globes.' Political and Slate Surface. (Philip.) 1*s*. 6*d*. each.

Introductory Mechanics. By Edward J. Bedford. x+141 pp. (Longmans.) 1*s.* 6*d.*—This introduction is designed to meet the needs of pupils whose knowledge of the usual subjects of an elementary-school training is not quite fresh enough to enable them to take up the study of mechanics as presented, for example, in Stage I. of the Board of Education's syllabus, or of pupils who wish for some knowledge of machines with a view to intelligent work in machine drawing. The treatment is therefore of a very elementary character. There are doubtless many evening-class pupils to whom a book on these lines may be useful, but such a book is not easy to write, and we think that the one before us is only moderately successful. The book conveys a good deal of information, but it does not seem to us to be quite the kind of book that is needed as an introduction to mechanics.

A Preliminary Geometry. By Noel S. Lydon. ii+108 pp. (Methuen.) 1*s.* 6*d.*—Although we do not think that the best method of introducing children to the study of geometry is that adopted in this little book, we gladly recognise the care which the writer has bestowed on the work, and we think that quite an interesting course can be developed on the lines laid down. Drawing occupies naturally a prominent place, and practical acquaintance with many geometrical facts will be gained by the pupil who works through the book. In a preliminary book it would, we think, be wise not to trouble pupils with all the names for the different kinds of quadrilaterals given on pp. 56 and 57.

A Modern Arithmetic with Graphic and Practical Exercises. Part II. (with Answers). By H. Sydney Jones. x+297–596 pp. Also Parts I. and II. in one volume (without Answers). xiv+598 pp. (Macmillan.) Part II., 2*s.* 6*d.*; complete volume, 4*s.* 6*d.*—Part I. was noticed in THE SCHOOL WORLD, vol. ix., p. 474. Part II. fully maintains the high standard reached in Part I. The treatment is singularly fresh and instructive; it is thoroughly practical, and at the same time intelligent, providing an excellent discipline while avoiding the dangers of too great abstraction. A considerable portion of this second part treats of mensuration, but commercial arithmetic—stocks and shares, bills of exchange, &c.—is also taken up; the chapters on mensuration, with their beautiful applications of graphical methods, seem to us particularly good. The numerous exercises make the book suitable even for pupils who have to face examinations of the more old-fashioned type. There is only one suggestion of any importance that we shall venture to make, namely, that more attention might be given to literal arithmetic—not algebra, but the manipulation of ordinary numbers represented by letters. The book as it stands is, however, excellent, and we very cordially recommend it to the consideration of teachers.

The "Knowledge" Circular Slide Rule Calculator. (*Knowledge* Office, 27, Chancery Lane.) 3*s.* 6*d.*—This instrument has been designed by Major B. Baden-Powell, and the claim is made for it that, while yielding good results for the ordinary processes, it is specially serviceable for those who have to deal with foreign measures and wish to obtain rapidly the approximate English equivalents. The rotating dial has marks that indicate the position of the multiplier for a considerable number of the more frequently occurring units (*e.g.*, kilometres to miles, kilograms to pounds, &c.), and it is easy to put on marks to serve for any other unit that may be required. The instrument will certainly be convenient where comparatively rough and rapid results are desired. There has been, it seems, considerable difficulty in the actual construction of the apparatus; we do not feel quite sure that the difficulties have been completely overcome.

Pedagogy.

Studies in French Education, from Rabelais to Rousseau. By Geraldine Hodgson. 240 pp. (Cambridge University Press.) 3*s.* 6*d.* net.—This little book will serve a useful purpose in directing attention to the stimulus that the world has gained from France in educational reform, and in sending readers to the original sources of this influence; but it cannot be said that the author's treatment of the subject is either very well conceived or particularly illuminating. Challenging comparison, as it inevitably does, with the brilliant studies of the late M. Octave Gréard in the same field, the book seems lacking in perspective and breadth of view. Miss Hodgson has little that is fresh to contribute to the appreciation of Rabelais and Montaigne as educationists, and it would seem that her attitude towards Rousseau has been too much determined by her dislike of his personality and her resentment at the inadequacy of his views on the education of women. She devotes too much space to the easy and superfluous task of exposing the fallacies and exaggerations of "Émile," when it would have been more serviceable to aid in accounting for the undoubted fact that this remarkable genius, in spite of his numerous disqualifications, was the prime mover in the spread of modern educational ideals.

The Life of Tolstoy: First Fifty Years. By Aylmer Maude. vii+457 pp. (Constable.) 10*s.* 6*d.* net.—The first instalment of this excellent biography throws a new light on the great Russian thinker. It will be a surprise even to students of Tolstoy's novels and social theories, in this country at least, to find how much of his energy has been devoted, not only to the discussion of educational problems, but to practical experiments in school-keeping and the writing of school books. He was only twenty-one when he first started and conducted a school for the children of the peasants on his own estate; and this was no mere incidental enthusiasm, for the project was taken up again and again in the ensuing twenty years as opportunity admitted. The most serious effort was made in 1861, when he returned from studying educational systems in other countries, and attempted to apply the doctrines of Rousseau in something of the spirit of Pestalozzi. As might have been expected from the temperament of the man, the reaction from traditional methods was carried to an extreme, and the liberty accorded almost reached the point of anarchy. The children were free to come or not as they pleased, and, when they were there, to study what they liked for as long as they liked. From Tolstoy's own account, his class-room would seem to have been a good deal of a bear-garden, but his experiments in reform were undoubtedly of great value, and the ideals he followed were largely on the lines of the most advanced educational thought. He insisted that the nature of the child must be studied sympathetically, and that the arousing of natural interest must take the place of compulsion. In his educational articles, as well as in practice, he laid stress on training in artistic effort, and valued drawing, singing, and composition above all purely informational subjects. To supply the lack of suitable reading-books he prepared text-books which, in course of time, obtained a great circulation.

An Introduction to Psychology for the Use of Teachers. By J. H. Wimms. vi+129 pp. (Charles and Dible.) 1s. 6d. net.—It may well be questioned whether the traditional analytic treatment of psychology is of great value to teachers. The analysis leaves so completely out of view the wholeness of mental process, in spite of the reiterated protests and warnings of the writers that the unity of mind is axiomatic, and that they are at the moment only considering a phase or an aspect, or whatever else they may call it, of mind. Further, an introduction to analytic psychology should, in our view, leave the teacher out of account. Failure to do this occasionally leads even so competent a psychologist as Mr. Wimms into confusion when he explains and into error when he dogmatises. To advise teachers that any appeal to volitional attention should be resorted to very rarely is not altogether consistent with the position he takes up when discussing character, and had he not had the practice of the teacher so much in his mind, his brief account of development would surely have been clearer. The book follows the customary lines more or less closely, and those for whom it is written will find the subject as simply and clearly treated as is perhaps possible under the particular limitations to which the writer has subjected himself. From the teacher's point of view one finds the chief drawback to the analytic treatment in the relatively unimportant place that is given to the conative aspect of mental processes. It is significant, for example, that in the chapter dealing with interest and attention we find nothing about the purposive character of mental life. The writer is concerned so much with the problem of the moment—securing the attention of a class—that he leaves out that which is really vital—the development of lines of purpose which are not only the ultimate determinants of attention, but also lie at the very heart of the problem of character formation. *The* "Psychology for Teachers" has, we fancy, yet to be written. Nevertheless, we think this little book is, for its size, the best of those that have yet appeared.

Child Study and Education. By C. E. Burke. With Preface by Canon Hogan. xxvii+184 pp. (Browne and Nolan.)—Those who take up this little book in the expectation of finding in it an introduction to the scientific study of children will surely be disappointed. There is no hint of scientific method, or of the results of recent research. A book on child-study that does not contain any reference to the work of Stanley Hall, for example, seems hardly to deserve its name! In point of fact, however, Mrs. Burke has not written for professional students of children. She has read widely on the subject of home and school education, and parents who have not realised their responsibilities, or, having realised them, are painfully aware of difficulties and shortcomings, will find practical advice and encouragement in the various chapters dealing with early training, school days, &c. The author writes with a lofty sense of the importance of her subject. She quotes largely from such writers as Thring, Dupanloup, Lyttelton, and Miss Mason, not to forget Herbert Spencer and Guyau—names that appear a little incongruous, perhaps, in the text they serve. At times Mrs. Burke is overcome by the greatness of her authorities. Thus, after citing a passage from Fitch on "school discipline," she writes: "The authority we quote not only bears the proud titles of M.A. and LL.D., but likewise held the post of his Majesty's Inspector of Training Colleges," &c.

Colour-sense Training and Colour Using. By E. J. Taylor. iv+84 pp. (Blackie.) 1s. 6d. net.—As a brief manual of colour and colour relations this little book is excellent. It is arranged logically and well illustrated. The writer is on less familiar ground when he touches questions of psychology. His views on the development of the sense of colour would hardly receive the approval of a student of the mental life of children. As a manual of the facts of colour the book is to be recommended, but as a manual of method for young children it is less satisfactory.

The Psychology of Feeling and Attention. By E. B. Titchener. viii+404 pp. (The Macmillan Company.) 6s. net. Psychologists have in recent years waged a keen controversial war upon the subjects dealt with in Prof. Titchener's lectures. In the first set, he gives us an admirable survey of the various theories, ranging from that of Stumpf, who would reduce all simple affective experience to mere quality of sensation, to those which find their chief representative in Wundt, who regards feeling and sensation as disparate psychic elements, enjoying independent existence. The author takes his stand with the latter group. He would give affection "elemental rank in consciousness as a process co-ordinate with sensation." This is not the place to discuss the *pros* and *cons* of the matter. Readers who are interested will find the book a useful guide to the various issues raised, as well as to the literature of the subject. Of no less importance is the section which deals with Attention. The teacher's interest in this subject is perennial. Indeed, the pedagogic demand for guidance in this particular direction has led the psychologist to much hasty synthesising. Thanks to the advances of experimental methods of inquiry, the absence of any adequate analysis has been made obvious, and a whole host of problems are still undetermined. Prof. Titchener's lectures cover the field of controversy both clearly and adequately. He does not leave us uncertain of his own position. He would reduce the psychology of attention to a "psychology of clearness, considering clearness as an attribute of sensation conditioned upon nervous predisposition." Throughout the book there is much acute criticism of the opposing theories. The author's point of view is naturally that of one who pins his faith to experiment. Incidentally he makes an interesting attempt to lay "that very ancient ghost" which has survived through our reverence for Kant, who denied the possibility of elevating psychology to the rank of an experimental science for the simple reason that introspection destroys its own object. It is a pity that, even in the interest of scientific accuracy, the quotations from German and other writers should not have been translated in the text. Of course every psychologist of pretension reads German, but the effect of the frequent insertion of German phrases in an English text is not quite pleasing.

Miscellaneous.

The Garden of Childhood (174 pp.) and *The Magic Garden* (186 pp.). By Alice M. Chesterton. (Nelson.) 1s. 6d. each.

A Teacher's Handbook of Moral Lessons. By A. J. Waldegrave. 154 pp. (Nelson.) 1s. 6d.

Thrift Manual, for the Use of Teachers in Primary Schools. 168 pp. (King.) 2s. net.

The moral instructionists have come to recognise that their lessons must be made interesting. Children cannot be taught to be kind by preaching or didactics; but when they are told the story of the Good Samaritan they feel how naturally and forcefully the command, "Go thou and do likewise," arises out of the circumstances. Hence Miss

Chesterton's stories, which are well told, until they become medicinal at the end. It is strange that a league which strictly excludes all thought or mention of God should deal so largely in fairy stories. Superstition seems to flourish when faith decays. The Charity Organisation Society prefers to teach morals by arithmetic—*e.g.*, "If John gets up five minutes earlier than Robert, how much time does he save in a week (six days)?" This is supposed to teach thrift; incidentally, to us it seems to encourage lying late on Sunday.

The Art of Living at School. By J. W. Williams. 48 pp. (Pall Mall Press.) 6*d.*

Self-helps to Health and Fitness. By Edwin Wall. 31 pp. (Eastbourne: Sumpeld.) 1*s.* (Large quantities at reduced rates.)

Both these books are full of practical advice for the regimen of health, couched in simple, pithy language, and both regard bodily health as a means to the development of stronger self-control and will-power.

For Our Daughters. A Plea for Co-education. By Mrs. Ennis Richmond. 16 pp. (Garden City: Wheeler, Odell and Co.) 3*d.*—Mrs. Richmond is apprehensive as to the type of girl produced by our large girls' schools. They are, she thinks, averse to marriage, and have a supreme contempt for young men—"won't look at anyone under fifty." In view, also, of the decay of family life, the only remedy is to put boys and girls to school together, and restore the natural relation.

The Philosophy of Goethe's Faust. By Thomas Davidson. 120 pp. (Ginn.) 3*s.* net.—It was said by Hegel that religion, philosophy, and art had all the same content, and differed only in the mode of expression. These lectures of Mr. Davidson interpret in the language of philosophy that which Goethe's drama presents in the form of poetry—individual, concrete, and appealing to sense. Mr. Davidson treats the drama as representing "the future spiritual movement toward individual emancipation composed of the Teutonic Reformation and Italian Renaissance." It is a helpful study.

Leaves from a Cambridge Note Book. By O. J. Dunlop. 64 pp. (Cambridge: Heffer.) 2*s.* 6*d.*—This is a collection of short sketches of Cambridge life in its more superficial aspects as they strike the eye of a Girton graduate. It is after the style of "The Road Mender," but it is a long way after—*e.g.*, "a straight road over a flat land leads into the sky, which holds within it the highest." Miss Dunlop should remember that poetic order of words does not make poetic prose, and when the thought is sheer commonplace—*e.g.*, "valleys are fragrant"—it only irritates the reader to have it poetically inverted—"fragrant are valleys." Also, there is too much "leaping" in the book. "Down leaps the bank to the river." "The hedges leap out of brown woods." This, we presume, is the poet's animism; but when "the road leaps rapidly ahead of us," one yearns for the expiry of the time-limit. Still, there is a happy vein in the book. Let Miss Dunlop, after much pruning and total abstinence from leaping, try again.

The Rational General Knowledge Test Cards. (Charles and Dible.) 2*s.*—The introduction of general knowledge questions in scholarship examinations was sure, sooner or later, to produce the cram book. These cards may be useful to a teacher who is jaded or in a hurry, but for boys we should recommend by preference a copy of Baden-Powell's "Scouting."

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 Training of Faculty.

THE article by Dr. Hayward (THE SCHOOL WORLD, November, 1908), in which Mr. Paton and I together with others are rated for our allegiance to the dogma of "formal training"—whatever that may be, is a strange production to appear in a sober educational magazine at the present day. The psychologist must soon sacrifice what little hold he has on the sympathies of those who take a serious view of education if he allow himself to give utterance to such verbiage.

It would not be easy to match the vagueness of the doctrine put before us as argument against the training of faculty. "The dogma of 'formal training' or 'faculty training' has been gravely suspect—ever since a certain epoch-making chapter of a work on Herbartian Psychology was written: *or rather it should have been gravely suspect*; but in point of fact the dogma is now *as much alive as ever.*" Sweetly innocent and logical logic this!

But it is nothing to other posers that are put to us: thus we are asked—"Is it a good thing to be generally observant? Do we need to gape at everything around us? Is observation a good thing in the abstract or in itself? Surely we should never make an inch of rational progress if we were observant in this sense." It is a little difficult to grasp the meaning of vague talk such as this—to see what "observant in this sense" means; what "observation in the abstract or in itself" is. Since when has gaping been a synonym of observing? Gape is defined in the dictionary as "Indicative of sleepiness, dulness, drowsiness or indifference"; "gaping idiot" is an expression not infrequently heard—I am not aware that it is ever applied to an observer.

As to whether it be a good thing to be generally observant, so few are that it is difficult to give an answer based upon the test of experience. The consequences of lack of observing power are so frequent and manifest, however, that it is clear that we could put up with some extension of the class of observant persons: it is not necessary to go far to obtain proof of this—even the title of the article under notice is an illustration. In my younger days *and* ranked as a conjunction: as a part of speech which was defined as being a particle serving to *connect* words and sentences; we were taught moreover to regard the comma as the antithesis of the conjunction. We have changed all this: the sense of punctuation is gone the way of the subjunctive and other usages of repute in the past. All our writings nowadays are infested with the comma bacillus—the compositor is allowed to sow it broadcast, like pepper, so that the choleraic aspect of the printed page is becoming little short of unendurable—the jerky cinematograph picture being almost restful in comparison with our modern print. Whether observation be or be not a good thing in itself or in the abstract, we might at least be consistent to the extent that if we teach one thing in our schools we take care in general practice not to do something which is the very opposite. The fact is there is no broad formative training—no correlation—in such matters.

Much is said of drudgery in the article under notice—but in this as in other cases the writer tilts at a bogey

of his own erection. Everyone who is concerned with the development of sound educational method is aware that, whatever exercise be performed, to make it profitable, meaning and value must be attached to it by the learner. No one has advocated drudgery pure and undiluted as of any educational value, yet drudgery is inseparable from all formative work. As I have said elsewhere—"Whilst every teacher will admit that it is necessary to create interest, we all know that it is not always possible to maintain this at bursting point and that in school, as in the world, uninteresting work must be done sometimes; that in point of fact, it is most important to acquire the art of doing uninteresting work in a serious and determined way." (The Mosely Reports.) Mr. Paton has endorsed this statement of mine.

Convincing proof of the formative value of drudgery is afforded by the skill ultimately acquired by the actor, the athlete or music-hall gymnast, the mechanic, the painter, the sculptor.

No one who is not foolish expects all to benefit alike from formative training of this or that kind—but to talk of "faculty training" as discredited at the present day is surely to show complete ignorance of the situation. The extent to which it can be carried is yet to be ascertained—the ways of giving it successfully are to be worked out: we have always to be mindful of the fact that we are "mostly fools," as Carlyle expressed it—but the extent to which foolishness is a congenital fault and the extent to which it is an acquired character conditioned by faulty teaching—a product of the schools, in fact—are matters which receive no attention from teachers, who are too often both unobservant and too much enamoured of their methods to consider or question their efficacy.

The fact is, so little training which can be formative of the faculties is given in our schools, that it is impossible at present to come to any final decision as to the general effect of such training—surely, to speak of its downfall is not only premature but nonsensical.

H. E. Armstrong.

If Prof. Armstrong will read my article again he will find that though I referred in a vague way to "disciples of Prof. Armstrong" I nowhere criticised his own views. My reference was to certain purblind advocates of "training in accuracy," "training in observation," and so forth, who too often ignore the fact that the value of "accuracy," "observation," and other such things is quite relative to certain rational ends.

Thus, for example, we must frequently "approximate" (*i.e.*, ignore "accuracy"); we must frequently "concentrate our attention" (*i.e.*, deliberately refuse to "observe" things around us).

The word "gape" is not mine, but Prof. Adams's. On p. 161 of his "Herbartian Psychology" he says: "The educator who seeks to cultivate observation by supplying materials to gape at, does not know the rudiments of his art. True observation is the offspring of interest and knowledge. We observe easily what we are interested in or what we already know something about." (In "Chambers's Dictionary" "gape"=to stare with open mouth.)

"Drudgery" is no "bogey of my own erection." If Prof. Armstrong has read Kappa's "Let Youth But Know," he will remember the author's query, "Why should the best years of youth be portioned out between *dead task work* and idle child's play, both seeming deliberately calculated to conceal from it the splendour and the mystery . . . of life?" Laborious justifications of "drudgery" are being put forward every week. "A distasteful subject may be of the greatest ethical value simply because it is distasteful" (Mr. J. L. Paton). Note the "greatest" and the "simply because"! If Mr. Paton, as I freely admit, often speaks admirably in another strain, that confirms my statement that "formal training," though rampant, is not without rivals.

Prof. Armstrong's reference to actors, athletes, &c., shows that he is unaware of the difference between (1) mediate and immediate interest, and between (2) the acquisition of specific and of generic power. If he assert (1) that absolute drudgery, as distinct from "mediate interest," is formative, or that (2) specific acquirements can spontaneously generalise themselves, my reply is that he is in conflict with modern psychology. I refer him to such books as Bagley's "Educative Process."

I believe that if Prof. Armstrong will read, mark, learn, and inwardly digest Prof. Adams's book, he will discover in it the element which is at present missing from certain crude presentations of his own important teaching. Meanwhile, I am willing to discuss "The Downfall of the Dogma of Formal or Faculty Training" on any platform in England. In America, I may remark, the dogma is almost dead already, and men like Dr. Stanley Hall object strongly to much of the "training in accuracy" approved on this side of the water.

My English, I admit, is often slipshod. Recently someone was saying the same about Prof. Armstrong's.

F. H. Hayward.

The Qualifications of the Teacher of Geography.

Mr. Young has stated in the November number of The School World what seem to him the qualifications of the teacher of geography. His article is of five columns: he emphasises the need for scientific knowledge and scientific training in three and a half columns, the need for originality in one column, and refers to the rest of the qualifications, the ability to draw on the blackboard, photographic knowledge, and an acquaintance with current geographical literature, in half a column. I cannot but think that this arrangement leaves a wrong impression of the relative importance of the geographical teacher's qualifications, largely because of important omissions.

I have no wish to minimise the need for scientific knowledge, and still less do I wish to slight scientific training. Indeed, I would add to the list of science subjects that Mr. Young explicitly or implicitly suggests that the geography teacher should know, and I would insist even more strongly on the need for a scientific training which would enable the geography teacher to apply scientific method to geography teaching.

Yet it seems to me that he omits some qualifications as important as scientific knowledge and more important than the art of blackboard drawing or of lantern-slide making. It is quite possible that Mr. Young does not intend to be exhaustive. He definitely omits to do more than enumerate mental and moral qualities necessary for any teacher, but the very fact that he does even so much as enumerate these suggests that there are no other qualifications of any account.

Now I submit that though scientific knowledge is a foundation, it is only a foundation. The geography teacher must have an *equal* knowledge of history and of economics, else his knowledge of the natural sciences leads nowhere, and he must have the special qualification of the geography teacher, the qualification which distinguishes him from other teachers—a mind for space relations, the mind to *see* the shapes of things behind the map or chart, the mind which sees the moving, changing shapes. He must *see* the cyclone, not the map of the cyclone, but the great

flat swirl of air 1,000 miles across and perhaps five miles high: he must *see* this moving across the land, *see* the winds move round and inwards, and up and outwards, the clouds condensing, the rain falling, and all this as he looks up into a small piece of sky. He must *see* the earth move round the sun, now slightly nearer, now slightly further, the earth itself rotating. He must *see* the movements of men hurrying to their work, sleeping and waking, collecting in towns because it pays to do so, raising empires and republics because it pays to do so. Because this element of time in human affairs is introduced he must have a knowledge of history; because the question is introduced whether it pays to do certain things he must have a knowledge of economics.

This does not, of course, mean that he must teach history or economics any more than he must teach geology or physics, any more than, as Mr. Young says, he must discuss the making of a thermometer before he uses it; but it is absolutely impossible to teach "products" or "towns" or "political geography"—to use the geographical jargon—without a sound knowledge of history and economics.

Mr. Young only refers to history as something rather apart from geography; the study of economics is not mentioned; and the ability to imagine accurately the relations of all the various moving shapes, this ability being the special qualification of the geography teacher, to which all other qualifications are subsidiary, is omitted altogether. This ability is important, and should be stated to be important.

J. FAIRGRIEVE.

William Ellis School.

I AM indebted to Mr. Fairgrieve for pointing out my omissions, particularly with regard to the possession of "the mind to see the shapes of things behind the map or chart." Here I am completely at one with him. In fact, if the teacher cannot do this and make his pupils do this, his work will be dull and lifeless. But I fancy that the teacher of many other subjects requires this power to some extent.

I cannot agree that a teacher's knowledge of history and economics must be *equal* to his knowledge of the natural sciences. Geography reaches out in many directions, and embraces many subjects. What we have to take into account just now is not what the ideal teacher should possess in the way of knowledge, but how geography may be better taught under actual existing conditions. If the work is given to the man who is responsible for science, he is not likely to be well versed in history. If the ordinary form-master takes the subject, he may know much history, but will usually possess little scientific knowledge. I venture to think that the greater part of geography, as required for the Local examinations and for matriculation at London University (and it is always the actual condition of affairs I have in my mind), demands a knowledge of scientific principles and methods on the part of the teacher, and little of history. I regard history as a subject apart from geography in the nature of its methods, its aims, and its subject-matter. Of course, the teacher of history should know some geography, and he cannot be said to know much of his subject unless he does. But it seems to me that it is his business to use the results obtained by the teacher of geography to illustrate his story, while it is the business of the teacher of geography to arrive at many of those results by processes allied to those that are adopted by the teacher of science. Science, geography, history, economics—all grasp hands somewhere. In practice, they are taught in compartments. And in the compartment labelled "geography," for schools of the type I was discussing, history and economics as separate subjects will not necessarily form a large part of the teacher's equipment.

ERNEST YOUNG.

Lower School of John Lyon, Harrow.

Moral Instruction in France.

MAY I offer a protest against the terms of a paragraph in your review of the reports connected with the Moral Education Congress? In commenting on the moral instruction given in French schools, the writer suggests that the dissociation of this subject from religious teaching is to be held responsible for a deterioration in the national life which he assumes to be a matter of common knowledge, and points to the achievements of Germany, in contrast, as due to her retention of Scripture lessons in the school curriculum. It must have been a matter of keen regret to many readers of THE SCHOOL WORLD that currency should have been given to so unworthy a criticism. To exalt one great nation at the expense of another is no reputable service, and the self-righteous attitude of your reviewer in sitting in judgment on a people that has done so much for the progress of civilisation can only be understood by assuming his ignorance of contemporary French life and thought. To judge from his misunderstanding of the French proverb he quotes, his knowledge of French literature, such as it is, has probably been obtained at second hand, and is perhaps limited to English translations of the kind of French novel which is said to be written largely for consumption in this country. He seems to be unaware that in the last few years there has been an eruption of objectionable literature in Germany which outvies the particular section of French fiction on which it is modelled, and is without its virtue of sincerity.

Even if the decadence of France were an admitted fact, it would be ridiculous to ascribe it to the presence or absence of any kind of theoretical study in the schools. Changes in national habits and ideals are due to deep-seated social and political causes, and it is claiming far too much for educational systems to attribute such an influence to them.

J. O.

COMPARISONS may be odorous, but for all that they are necessary. The history of the world is the judgment of the nations of the world. By that judgment, systems of education must stand or fall. If your correspondent thinks me too ignorant or too prejudiced, may I refer him to a book which he will find worth his study, Mr. Benjamin Kidd's "Social Evolution"? May I refer him also to M. Fouillée's article in the *Revue des deux Mondes*, January 15th, 1897, entitled "L'École et la Presse"? M. Fouillée is the president of the Statistical Society of France. These men do not think the cause of truth or of France is served by blinking the facts, nor does

THE REVIEWER.

P.S.—I quoted no French proverb.

A Simple Exercise in Algebra.

THE following exercise in algebra is an extension of work done by a form of pupils, averaging twelve years, who had recently commenced the study of algebra, and were about to start on involution and evolution. The frequency with which powers of the first nine natural numbers occur in examples on involution and evolution makes it necessary for pupils to recognise at a glance these powers and their corresponding roots.

To bring about this result the pupils were told to draw up a table of powers, as far as the fifth, of numbers from

1 to 9. The table when finished presented the following appearance:

When $n=1$	$n^2=1$	$n^3=1$	$n^4=1$	$n^5=1$
$n=2$	$n^2=4$	$n^3=8$	$n^4=16$	$n^5=32$
$n=3$	$n^2=9$	$n^3=27$	$n^4=81$	$n^5=243$
$n=4$	$n^2=16$	$n^3=64$	$n^4=256$	$n^5=1024$
$n=5$	$n^2=25$	$n^3=125$	$n^4=625$	$n^5=3125$
$n=6$	$n^2=36$	$n^3=216$	$n^4=1296$	$n^5=7776$
$n=7$	$n^2=49$	$n^3=343$	$n^4=2401$	$n^5=16807$
$n=8$	$n^2=64$	$n^3=512$	$n^4=4096$	$n^5=32768$
$n=9$	$n^2=81$	$n^3=729$	$n^4=6561$	$n^5=59049$

On completion of the table it was copied on the board for purposes of demonstration.

The boys were asked to point out any peculiarity or repetition of figures which would enable them to recognise a power or root easily.

At first answers came but slowly. Emboldened by success, however, in naming what, at first sight, appeared to be too obvious for recognition as important, the pupils rapidly followed up one observation by others.

Though not given in the order stated below, the following facts were noticed:

(*a*) All powers of unity are unity.

(*b*) All powers of 2 are even numbers.

(*c*) All powers of 3 are odd numbers.

(*d*) All powers of 4 are even numbers.

This follows from (*b*), seeing that 4 is a power of 2.

(*e*) All powers of 5 have 5 as units digit.

(*f*) All powers of 6 have 6 as units digit.

(*g*) All powers of 7 are odd numbers.

(*h*) All powers of 8 are even numbers.

This can be deduced from (*b*), as 8 is the cube of 2.

(*i*) All powers of 9 are odd numbers, ending alternately in 1 and 9.

From this table the boys arrived at the following statements:

Powers of even numbers are even.

Powers of odd numbers are odd.

It was recognised that the above laws had been formulated only for powers up to the fifth. It was left to one pupil, the top boy of the form, to show that the laws were true for all powers. This pupil noticed that a number and its fifth power have the same figure in the units place. It follows, therefore, that the figure in the units place for powers higher than the fifth repeats the figure in the units place of the power four degrees lower. Thus the square and sixth power of any number have the same units digit, the cube and the seventh power the same units digit, and so on. Generalising this, we arrived at the statement that powers of the same number differing by four degrees will have the same units digit.

The important fact that a number and its fifth power end in the same figure enables one to read off the root of a perfect fifth below 100,000 at a glance. The root is merely the units figure of the power given. Thus the fifth root of 32768 is seen to be 8.

Since any number and its fifth power have a common units digit, the subtraction of the former from the latter will leave a number the figure of which in the units column is zero. This remainder is thus divisible by 10. Expressing this algebraically, we arrived at the general law that n^5-n is always divisible by 10. This result is usually reached only by advanced pupils when studying the theory of numbers. By the above method it was deduced by young pupils recently introduced to the use of algebraic symbols and indices. By such means was the end gained. The pupils became thoroughly acquainted with the powers and roots occurring in their text-book, and oral answers to the examples on involution and evolution were given with a degree of rapidity not previously expected from a junior form. P. H. Brill.

Matriculation Examinations.—North and South.

What a boon it would be if the University of London, on one hand, and the Universities of Manchester, Liverpool, Sheffield, and Leeds on the other, would agree to adopt a uniform matriculation examination! The present state of things may be of advantage to the private crammer. It is a source of grave distraction to hapless secondary-school masters, who strive in their classes to meet the requirements of scholars, of whom some need the Southern and others the Northern matriculation certificate. West Riding.

Vulgar Fractions and Decimals.

Mr. Robinson's timely plea for a judicious admixture of vulgar fractions and decimals is well founded. The swing of the mathematical pendulum leading almost to an absolute abuse of decimals in place of a former slavish adherence to vulgar fractions is, indeed, a correction of one error by means of another of a similar nature.

The remedy seems to lie in teaching fractions and decimals side by side, and thus to render it impossible for a young "hopeful" to say, "I have done fractions, and I am beginning decimals." For whichever system is "done" first leaves a predilection in its favour in all after working.

In general, the pupil might be advised to refrain from decimalising $\frac{1}{8}$, $\frac{1}{6}$, $\frac{1}{9}$, and their commoner multiples; he might even be encouraged to use such mixtures as $27{\cdot}73\frac{1}{2}$, after the manner of some Americans when dealing with dollars. W. D. Roberts.

Cheriton Gardens, Folkestone.

Handbook of International Drawing Congress.

In the September number of The School World, in the article on the International Drawing Congress, the statement was made that the "Handbook to the Exhibition" might be obtained from the secretary of the congress for 3*s.* 6*d.* I have tried again and again at booksellers to obtain a copy, but have been unsuccessful. Could you kindly give name of secretary, with address, that I might send to him? K. Redden.

Barnstaple.

[The second edition of the "Handbook of the International Drawing Congress" is still on sale, price 3*s.* 6*d.* It may be obtained from the organising secretary of the congress, Mr. C. M. Mathews, 151, Cannon Street, London, E.C.—Editors.]

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